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# THIS WAS EARLY OIL

BY ERNEST C. MILLER



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# *This Was Early Oil*

Contemporary Accounts of the Growing  
Petroleum Industry, 1848-1885

Compiled and edited

by

ERNEST C. MILLER

Commonwealth of Pennsylvania  
THE PENNSYLVANIA HISTORICAL AND  
MUSEUM COMMISSION

Harrisburg, 1968

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## *Foreword*

The compiler of this volume, Ernest C. Miller, has been actively engaged in the petroleum industry for more than thirty years, and for the same period he has been an avid bibliophile and bibliographer of early oil literature.

In his extensive search for the significant and often difficult to find records of the industry during its infancy, he has investigated many public and private libraries holding oil material, both here and in Canada. This work included reading myriad volumes on the history of petroleum, and, in addition, covering the large field of pamphlets, newspapers, and rare documents, these later items being generally owned by historical societies or institutions.

While Mr. Miller would be the first to admit that such a work can probably never be termed *complete*, it is my belief that the material made available in this book is of the greatest importance for a complete background picture of the first years of the petroleum business.

That this information is now readily available in this form will prove a blessing to many harried librarians and to a host of people in a wide variety of fields.

James B. Stevenson, *Chairman*  
*Pennsylvania Historical and Museum Commission*

Titusville, Pennsylvania



## *Preface*

WITH HIS first oil well, completed late in August, 1859, Edwin L. Drake showed the world how it was possible to recover vast quantities of crude petroleum, and by so doing made possible the development of the petroleum industry.

Drake's discovery brought with it great activity. Between August of 1859 and April of 1861, the most exciting place in this country, indeed perhaps on the face of the globe, was a relatively small area in north-western Pennsylvania with Titusville serving as the hub. This area was very soon termed "the oil region."

Only the advent of the Civil War in 1861 diverted some interest and endeavor away from this district. As soon as the war ended, in April of 1865, a horde of citizens who had been held in check by the conflict, plus thousands of discharged and unemployed soldiers loaded with their mustering-out pay, headed for the petroleum fields they had heard and read about; all were seeking wealth through oil.

For most, disappointment would be the order of the day, while for a small number, wealth, often beyond the imagination, would be their happy lot.

The articles, newspaper reports, and books that were originated because of the petroleum developments were good and bad, long and short, but widely read by an interested populace. Many of the earlier books are now very scarce items eagerly sought by collectors. Few newspaper files from the oil country are available to reflect the activities of the very first years of oildom.

The first twenty-five years of growth and development were most important. During those formative years, the industry developed means, methods, and rules, most of which are still in current use. Production was improved nearly monthly; new drilling methods and the torpedo came into use. Transportation underwent several revolutions, moving from the waterways to the teamsters, and from the teamsters to the tank cars, and finally to the pipelines. Refining improved and as it rapidly advanced, waste products were turned into profitable articles of commerce. Marketing evolved from the medicine-peddler stage to cover a wide range of lubricants, waxes, and solvents sold domestically and at many foreign destinations either through marketers or by direct refinery representation.

Had you lived in those years, no matter how prodigious a reader you might have been, you could not have read all of the most impor-

tant and most interesting literature on petroleum and its development. The news and literature in the field grew as fast as did the industry.

Some years ago, Dr. Paul H. Giddens, at the time Curator of the Drake Well Museum, prepared a documentary history, *Pennsylvania Petroleum, 1750-1872*, published by the Pennsylvania Historical and Museum Commission, 1947, which put into print again many important documents and printed materials. But this included chiefly materials in the museum, which limited somewhat its scope and coverage. Despite his earnest efforts, various other worthwhile and informative reports did not become known at the time. These additional items of consequence have now been carefully sifted and selected and are presented here for the first time since their original publication. The only exceptions are the article, "The Oil Pits Before 1848," and the "Medicus" dispatch of September 8, 1859, to the New York *Tribune*; it was deemed necessary to include these for background information.

It is hoped that this compilation will be of value to historians, research workers, teachers, students, and many others.

Many kind people gave me assistance in the preparation of this volume. To name them all would be impossible, but I am heavily indebted to Mrs. Georgia Coyle, Library Director of the Warren Library Association, Warren, Pa., and to her able assistant, Mrs. Elizabeth Smith. The late A. C. Thompson, Curator of the Drake Well Museum, at Titusville, also offered valuable suggestions. My typist, Miss Joyce Gilson, did an outstanding job from difficult source material.

The author would like to thank the members of the Pennsylvania Historical and Museum Commission and its Executive Director, Dr. S. K. Stevens, for making possible this publication; he would also like to thank Mr. Donald H. Kent, Director of the Bureau of Archives and History, and Mr. William A. Hunter, Chief of the Division of History, who supervised publication; and members of the staff of the Division of History: Mr. Harold L. Myers, Associate Historian and Chief of the Editorial Section, who checked the manuscript for accuracy of transcription, readied it for the printer, and prepared the index; and Mrs. Gail M. Gibson, Associate Historian, and Mr. Alexis Zervanos, Assistant Historian, both of whom assisted.

Needless to say, errors are solely my responsibility.

Ernest C. Miller

Warren, Pennsylvania



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# *Before Drake—A Prologue*

## THE EARLY DAYS

It is important that the reader have a knowledge of the position of petroleum in the days before Edwin L. Drake's successful well of 1859 so that the contents of this book will be more meaningful. This is an attempt to provide that background.

The first map to show the location of petroleum in Pennsylvania was Lewis Evans' "Map of the Middle British Colonies in America," which appeared in 1755. Five years earlier, Peter Kalm, the Swedish naturalist, had traveled extensively in North America, and his report, with maps, was published in London in 1771; the word "Petroleum" appears where French Creek meets the Allegheny River, but the text offers no explanation.

Thomas Pownall prepared a map of the British colonies in 1776, and again the word "Petroleum" appears in the same general location. It seems obvious that the map makers had received reports of the occurrence of oil in northwestern Pennsylvania from soldiers, missionaries, and traders, all of whom were acquainted with the territory.

Petroleum was surprisingly well known in the United States prior to 1792. In that year Tobias Hirte was advertising crude oil through English and German language broadsides and through his dealers located in Philadelphia, Germantown, Bethlehem, Easton, Reading, and Lebanon in Pennsylvania, and Frederick and Baltimore in Maryland. His broadsides explained how it was collected and termed it "Indianisch-French-Criek-Seneca-Spring-Oel." The oil was used as a medicine and was available in limited quantities from springs and pits located far to the west.

## THE OIL PITS

The source of Hirte's petroleum was northwestern Pennsylvania. In 1820, Timothy Alden, the erudite first president of Allegheny College, at Meadville, Pennsylvania, wrote an excellent description of the thousands of oil pits found in the valley of Oil Creek, chiefly in the vicinity of Titusville. His description, perhaps the earliest, included a look into the future; and of the petroleum found in these pits he wrote, "It burns well in lamps, and might be advantageously used in lighting streets. If, by some process, it could be rendered

inodorous, it would become an important article for domestick illumination."\* All that Alden said was to come true and much more as well.

These oil pits had long been known to the settlers, who collected the crude oil from the top of the water in the pits by spreading a blanket over the surface, pushing it down a little, then drawing the blanket out and squeezing the oil that had adhered to it into a vessel.

At other points along various streams in northwestern Pennsylvania, settlers found petroleum bubbling up in the water. At such places they often made a dam around the bubbling spring and then secured the oil by using a blanket, or at times by skimming it off with a thin paddle.

No one knows who made the thousands of pits, varying in shape from square to rectangular to oval and round, and generally about eight feet long, six feet wide, and six to ten feet deep. Piles of dirt from the excavations were visible alongside many of them in 1848. Trees growing from these heaps and from the centers of some of the pits were cut down and found to be at least three hundred years in age. Thus the pits were made prior to 1548.

The military records of the French, who were early visitors and military residents in this region, do not mention these pits, though they must have seen them. Indian history and tradition is equally bereft of information about them. Today it is believed that the Mound Builders, who spent some time in the trans-Allegheny region, were the constructors.

### EARLY USES

The early settlers used their crude oil as a medicinal panacea, often for beast as well as man. Mixed with flour it was an excellent axle grease and a handy lubricant around any farm. Sawmills employed it in its natural state as a journal lubricant, and the very poor even burned it for light though it had an odor and gave off black smoke.

### SEARCH FOR LIGHT

For at least twenty years prior to the Civil War, a search for better and cheaper sources of light had been in progress. As the demand for whale oil increased, so did the price, and whales became harder to find year by year. Cheaper but dangerous substitutes were

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\* Paul H. Giddens, *Pennsylvania Petroleum, 1750-1872: A Documentary History* (Titusville, 1947), p. 6-7.



used, such as camphene, which was purified oil of turpentine distilled over quicklime to free it from resin and mixed with alcohol to "stretch" the supply and improve the burning quality. Lard oil, tallow, and rosin were also used, but these did not solve the problem of finding better light for less money.

The first successful illuminating oil made in North America was produced from a bituminous material from Albert County, New Brunswick, by Dr. Abraham Gesner, a Canadian physician and geologist. He had made such an oil as early as 1846, and during that year he lectured about his work and demonstrated his burning fluid; he called his product "keroselain," a word derived from the Greek forms meaning "wax" and "oil." Soon the name was shortened to "kerosene," a name in good usage today.

Gesner sold his patents to the New York Kerosene Oil Company and supervised the erection of a large processing plant for the new owners. By 1854 the plant was manufacturing kerosene from cannel coals.

Others had been experimenting with making coal oil from coal tars. Luther and William Atwood, Boston brothers and chemists, produced the first such oil for sale in the United States in 1852. Their product, a blending of castor oil and animals fats with coal oil, had a trenchant odor; marketing it was a real problem. They hired Joshua Merrill, another chemist, to assist them at their plant, the United States Chemical Manufacturing Company at Waltham, Massachusetts.

A Boston candlemaker, Samuel Downer, soon purchased the Atwood works and persuaded the Atwood brothers and Merrill to work with him. They combined efforts to produce a fine heavy lubricating oil, but they could not remove the odor and their business declined to a very dangerous point. In 1858, George Miller and Company of Glasgow, Scotland, persuaded Downer to lease his oil-making process to them on a royalty basis. To help build the plant and to instruct the Miller employees in its operation, Merrill and Luther Atwood went to Scotland. While working at the new plant, Atwood cracked some naphtha into a light oil that burned with great brilliance and *without odor*.

When the two men returned in October, 1856, they had decided their future was in the production of a superior illuminant rather than in lubricating oils. Downer erected a plant at Portland, Maine, and another one at Boston, and Merrill developed a battery of special retorts in which 1,200 pounds of coal yielded 360 gallons of crude

oil per day. Soon fifty retorts were yielding 650,000 gallons of refined oil a year, and the chief raw material used was Canadian coal from New Brunswick.

In less than three years, more than thirty-five plants became engaged in producing coal oil, with the Lucesco plant in Westmoreland County, Pennsylvania, reaching the highest daily output with 6,000 gallons. All of these plants used cannel coals, and the finished product was so much better than previous illuminants that the making of coal oil lamps and lamp wicks developed into a large business.

### SALT AND OIL

While these chemists were perfecting a good illuminating fluid from coal oil, in quite a different section of the United States petroleum was being placed on the market, first as a medicine, then as a lubricant, and a little later as an illuminant.

The first clear record of the use of petroleum as a commercial lubricant dates from 1845 when a salt well owner from Tarentum, Pennsylvania, Lewis Peterson, Sr., delivered a sample of oil from one of his wells to the Hope Cotton Factory at Pittsburgh. The mill owners found that petroleum blended well with sperm oil; together these two liquids produced a superior lubricant for cotton spindles and at the same time made possible a saving of fifty per cent. J. H. A. Bone, an oil writer of 1865, reported:

The saving was so great . . . that a contract was entered into with Mr. Peterson, by which the latter was to supply two barrels per week, and for ten years this oil continued to be used at the Hope Cotton Factory, unknown to any but the proprietors.\*

Salt producers had long been accustomed to the interference caused by petroleum in their salt well operations along the Monongahela and Allegheny rivers. Often the supply of oil exceeded that of the salt brine. Some of their salt wells threw oil so high into the air that they actually were gusher wells.

### SAMUEL M. KIER

At Tarentum, twenty miles north of Pittsburgh on the Allegheny River, salt wells owned by Samuel M. Kier and his father produced

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\* J. H. A. Bone, *Petroleum and Petroleum Wells* (Philadelphia, 1865), p. 21.

quantities of petroleum. Knowing of no use for the oil, the well owners ran it onto the ground and quite often into the Pennsylvania Canal, much to the disgust of canalboat owners because the greasy stuff ruined their hemp cables and dirtied their newly painted boats.

When the wife of Samuel Kier became ill about 1849, the doctor prescribed the use of "American Medicinal Oil," a material originating from a well near Burkesville, Kentucky. Kier, a smart and active businessman who owned refractories, coal mines, and an iron foundry, and one of the initiators of a transportation company moving canalboats between Pittsburgh and Philadelphia, thought that the oil from his salt wells was the same as the "American Oil" being used by his wife. He was so sure of this that he lost no time in bottling his oil and marketing it as "Kier's Petroleum or Rock Oil," eight ounces for fifty cents. If it accomplished anything Kier claimed for it, it was indeed cheap, for it was promoted as a cure for burns, ulcers, cholera, asthma, indigestion, rheumatism, and blindness.

It was Kier who sent his gaudy red wagons throughout the East, driven by salesmen who peddled his panacea to farms and hamlets over an extensive area. Though it was well known and widely used, the demand did not consume the daily production, and the selling costs became so excessive that after two years Kier withdrew his wagons early in 1852 and sold only through druggists.

Looking toward other outlets for his petroleum, Kier had Professor James C. Booth analyze the crude oil, and Booth first suggested that Kier offer it as a solvent for gutta-percha, a rubber-like material containing resin. Booth, long-time president of the American Chemical Society, had established the first commercial chemical laboratory in this country in Philadelphia in 1836. After the analysis, Booth determined that by distillation a good illuminant could be produced from the oil. Following drawings made by Professor Booth, Kier erected a one-barrel still on Seventh Avenue in Pittsburgh and in 1850 began to distill petroleum. In this manner Kier became the first oil refiner in America. Calling his distilled product "carbon oil," he was able to sell it for \$1.50 a gallon.

The only trouble with Kier's product was that there was no suitable lamp in which it could be burned with complete satisfaction. Despairing of finding a proper lamp, Kier experimented himself and made changes in the lamp burners by allowing more air to enter; now his oil burned with a bright light, although the odor proved disagreeable to most users. Nearly ten years elapsed before acid treating

was developed and perfected so that the objectionable odor could be removed.

But the light made by Kier's "carbon oil" was so clear and the price so reasonable in comparison to previous standards that he had to build a larger still, one of five-barrel capacity. After he had constructed the larger refinery, Kier moved to Lawrenceville, outside the Pittsburgh city limits, for the city council had notified him that no more oil could be distilled within the town because of the danger from explosions and fires.

Mr. Kier's second still can be seen at the Drake Well Museum at Titusville, Pennsylvania, where it is on permanent display. His first still has disappeared.

Kier's activity as a refiner did not pass unnoticed, and by 1857 he had a competitor in the firm of Nevin, MacKeown & Company, Pittsburgh druggists. This company purchased oil from Tarentum and refined it in a still erected at nearby Allegheny City. While they were burning some of it in their store, A. C. Ferris, of New York City, a coffee and spice dealer, saw it and believed that he could introduce it in the New York market as an illuminant. Because of receiving many complaints on the odor of his oil, as well as on the dark color of it, Ferris decided that it would have to be improved; finally he developed a method of treating the oil with sulphuric acid and then caustic soda. This treatment produced an oil of light lemon color and immeasurably improved the odor. During 1858 Ferris had worked so hard and so successfully that he disposed of almost 1,200 barrels of oil, mostly from the Tarentum wells.

Now that an improved illuminating oil could be made from petroleum, the natural thing was to increase the yield of crude. In the attempt, Lewis Peterson, Jr., and a partner purchased land near Tarentum, close to the wells of the senior Peterson. There was a salt well already in existence on this land and the new combination reamed it out and deepened the hole so that it produced an average of three barrels a day. This entire production was sold to carding mills and therefore did not aid the illuminating oil picture one iota. Wanting still more petroleum, they thought that they would sink a shaft directly to the source of the oil. After much expense and considerable effort, they found they could not keep water out of the hole and the prospects looked bleak indeed. They sold the shaft to the Tarentum Oil, Coal and Salt Company, of which A. C. Ferris was one of the owners. Although the company resumed the work, so

much gas entered the shaft at a depth of 220 feet that the entire operation was abandoned.

A survey made at this time would have indicated that progress in petroleum was apparently limited because of the scarcity of the raw material.

### YEAR OF DESTINY

So far as the dawn of the petroleum industry is concerned, the year of destiny was 1853. Events transpired during that year that were responsible for the later accomplishments which really enabled the petroleum industry to get started.

The previous year, Dr. Francis Beattie Brewer, who had been practicing medicine in northern Vermont, moved to the village of Titusville—a virtual forest wilderness in northwestern Pennsylvania. There was little in Titusville to attract new settlers, for it was a sedate hamlet of three hundred people where pleasures were infrequent—square dances, attendance at church services, and fishing and hunting. The only industries were a gristmill, a lumber business, a woolen mill, and the mills of Brewer, Watson & Company, lumber merchants.

The lumber industry was the reason for the doctor's moving to Titusville, because in 1840 his father, Ebenezer Brewer, had purchased thousands of acres of good timber land along Oil Creek Valley. The father had, with Jonathan Watson, built up the firm bearing his name, and Dr. Brewer moved to Pennsylvania to work for the firm as a partner.

In 1853 Dr. Brewer finally had an opportunity to examine the oil spring near his "Upper Mill," located just below Titusville along Oil Creek. Some years before, his father had sent him by a personal messenger five gallons of this "Creek oil," and after using it on some of his patients, the doctor had marveled at its efficacy.

Now he discovered a greater abundance of oil than he had imagined, and he discussed with Jonathan Watson what use might be made of it. The men gave much thought to the matter and finally made an agreement with Mr. J. D. Angier, a farmer residing near the spring. The agreement of July 4, 1853, is the first oil lease of which there is record. The lease read:

Agreed this fourth day of July, A. D. 1853, with J. D. Angier of Cherrytree Township, in the County of Venango, Pa., that he shall repair up and keep in order the old oil spring



on land in said Cherrytree Township, or dig and make new springs, and the expenses to be deducted out of proceeds of the oil, and the balance, if any, to be equally divided, the one half to J. D. Angier and the other half to Brewer, Watson & Company, for the full term of five years from this date. If profitable.\*

Angier promptly hired helpers, dug trenches and pits, led the oil into a central collecting basin, and then arranged a series of wooden paddles with which the petroleum was skimmed off the surface. About eighteen gallons a day were collected in this fashion and used chiefly in lighting the mills and lubricating the milling machinery. It is known that the lease did not run the full five years, but it did go over a full year, and Dr. Brewer reported that the first year resulted in the recovery of 1,095 gallons of oil which he valued at \$821.

Dr. Brewer sent some of his "Creek oil" to a friend, Dr. Dixi Crosby, a member of the faculty of the Dartmouth Medical School and a renowned surgeon. Dr. Crosby and Oliver P. Hubbard, professor of chemistry at Dartmouth, examined the crude oil; Hubbard promptly declared it a valuable product but doubted that a sufficient quantity of it would ever be available as an article of commerce.

Within a few weeks, George H. Bissell, a Dartmouth graduate and a New York lawyer, returned to Hanover for a visit and saw the sample of oil in Crosby's office. At once Bissell became intrigued with the oil and wondered about its possibilities. Why, he asked, inasmuch as it seemed to resemble coal oils, could it not be used as an illuminant if sufficient supplies could be found?

As the year 1853 drew to a close, the stage had been properly set for the eventual drama of petroleum.

### MAN WITH AN IDEA

George Bissell discussed his petroleum ideas with his law partner, Jonathan G. Eveleth, and they agreed to send Dr. Crosby's son to investigate the largest oil spring near Titusville.

Albert H. Crosby met Dr. Brewer in Titusville and the two went down Oil Creek as far as the farm of Hamilton McClintock, where they saw the most famous of the oil springs. Crosby was enthusiastic about what he saw and promptly suggested to Dr. Brewer that the

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\* J. T. Henry, *The Early and Later History of Petroleum, with Authentic Facts in Regard to its Development in Western Pennsylvania* (Philadelphia, 1873), p. 60.



whole farm be purchased at the offered price of seven thousand dollars. But the money was not readily available and the doctor explained to Crosby that he did not want to take cash from his lumber operations in order to invest it in anything as uncertain as oil. Crosby replied that he "would rather have McClintock's farm than all the timber in Western Pennsylvania."

Once back in the village, Brewer and Crosby agreed that Brewer, Watson & Company would sell the Hibbard farm, the site of the principal oil spring, for five thousand dollars, a price which included the oil rights on nearby lands. For their part, Bissell and Eveleth were to form a company and develop the property and spring. The stock company was to have a capital of \$250,000, and one-fifth of the stock was to go to Brewer, Watson & Company.

Young Crosby returned to New York and reported to Bissell; his report was a glowing one and he apparently was so excited that, when he explained Dr. Brewer's offer, he was careless and erred in stating that the purchase sum was to be taken from Brewer's share instead of from treasury stock. At the same time, he failed to emphasize Brewer's insistence upon good security for the payment of the sale price. To make the confusion still greater, he wrote a few days later to Brewer that Bissell and Eveleth were accepting the terms.

Thinking the matter practically settled, Dr. Brewer went to New York in September, 1854, to sign the required papers. Much to his amazement, he soon discovered that Bissell and Eveleth were not ready to sign. They did not believe that oil could be as abundant as Crosby said. In an attempt to clarify things, Dr. Brewer gave the two men a minute verbal report on the lands, springs, method of collecting the oil, and his estimated costs. When he found them still doubtful, he kept his proposition open until one or both of them could visit Titusville to see for themselves what was being offered.

Bissell and Eveleth went to New Haven before starting for Pennsylvania, because a retired minister, the Reverend Anson Sheldon, thought they could interest some New Haven capitalists in taking over the entire tract. While staying at the Tontine Hotel in that city, the partners met James M. Townsend, energetic president of the City Savings Bank, who introduced them to other well-known citizens.

The New York lawyers were good salesmen with previous experience in several lines of endeavor. They interested James Townsend to the point where he and his friends and associates decided that there was money in developing petroleum. These Yankee participants were

willing to invest, but their New England caution led them to insist upon inspection of the oil by qualified scientists. Also, they wanted the land involved in the deal to be looked over carefully.

Luther Atwood, the Boston chemist who had done much work in developing coal oil, was first to analyze the oil. Rather promptly he reported it to have excellent qualities.

Benjamin Silliman, Jr., professor at Yale College, was employed to make a more extensive analysis of the oil. Years earlier, his father, Benjamin Silliman, Sr., had been interested in oil and had even visited the Seneca oil spring near Cuba, New York, during September, 1832. The Yale chemist spent five months on his work, partly because his still exploded and the company had to provide new equipment for him.

Meanwhile, Eveleth had gone to Titusville and inspected all the land and the known oil springs that would be included in the purchase of the Hibbard farm and adjoining land rights. Completely satisfied with all he had seen, Eveleth waxed more enthusiastic than Crosby had ever been.

On November 10, 1854, Dr. Brewer deeded the Hibbard farm to Eveleth and Bissell along with permission for them to secure oil on other lands of Brewer, Watson & Company; he retained for his firm the right to use the millrace and to carry on lumber and farming operations. No cash was used in this deal, the two New Yorkers giving their notes for the land; because Albert Crosby could not present his share of the purchase requirements, he was dropped from the scheme.

The first oil company in the United States was the Pennsylvania Rock Oil Company of New York, incorporated at Albany on December 30, 1854. Seven trustees were empowered to run the company, but Dr. Brewer was the only one who was not a mere figurehead. Eveleth and Bissell deeded their property to the trustees on January 16, 1855, and the new owners hired J. D. Angier to continue his work. Strangely enough, the supply of oil from Angier's trenches and vats fell off appreciably.

A stock-selling program was inaugurated for the new oil company by Eveleth and Bissell, but money was tight and sales were few. Crosby, now a reporter for a New York City newspaper, was given a little stock because of his previous interest and work, also two hundred shares to sell. Instead of trying to sell these shares, Crosby exerted his energy attempting to peddle his own stock. When Eveleth and Bissell

learned that Crosby had offered his stock at one-fifth of the \$2.50 per share value, they purchased his shares and he disappeared forever from the petroleum picture.

Unable to devote their full time to stock selling, the two lawyers were assisted by the Reverend Mr. Sheldon in New Haven, who truly proved an indefatigable worker. Despite all efforts, the stock did not sell.

Finally Professor Silliman's report was finished and ready for delivery on April 16, 1855. Silliman left the report with a friend in New York and instructed him not to turn it over until Eveleth and Bissell had guaranteed arrangements for his payment, which amounted to \$526.08. Eveleth used his own money to secure the report after Sheldon and he had made futile attempts to raise the sum.

Silliman's report was beneficial in every way. He made such a complete study of petroleum that it is today still regarded as a classic in technical circles. The manuscript was rushed to a New Haven printer, and in a few days copies of the pamphlet were distributed throughout New Haven and sent to prospects elsewhere. Titled *Report on the Rock Oil, or Petroleum, from Venango Co., Pennsylvania*, the report proved the turning point in the petroleum venture. Perhaps the most important statements were these:

... it appears to me that there is much ground for encouragement in the belief that your Company have in their possession a raw material from which, by simple and not expensive process, they may manufacture very valuable products.

It is worthy of note that my experiments prove that nearly the *whole* of the raw product may be manufactured without waste, and this solely by a well directed process which is in practice, one of the most simple of all chemical processes.\*

Doubts about the value of the raw material were of course dispelled, as men of Professor Silliman's character were cautious in their statements.

The oil company stock sold better than before but not in large enough quantities. Part of the trouble stemmed from the feeling against joint stock companies, many of which had lost money at a time when the New York state laws made stockholders liable for the debts of the company. As Connecticut law did not have this proviso, the idea was broached that if the company were reorganized under Connecticut laws, New Haven capitalists would purchase the stock.

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\* (New Haven, 1855), p. 20.

As a result, the New York firm was abandoned and the Pennsylvania Rock Oil Company of Connecticut was formed on September 18, 1855.

In this new setup, Professor Silliman was president, Eveleth and Bissell retained a controlling amount of stock, and a majority of the directors were selected from New Haven stockholders. The fact that Professor Silliman not only entered the new firm but also allowed himself to be elected president added prestige and created additional interest.

George H. Bissell now persuaded Rensselaer H. Havens of the real estate firm of Lyman & Havens, of New York, that his firm should do exploratory work at Titusville and attempt to produce petroleum. The Pennsylvania Rock Oil Company leased its Titusville lands to Lyman & Havens for fifteen years for twelve cents a gallon royalty.

The firm of Lyman & Havens found itself in financial difficulties before it could commence work at Titusville; it foundered and finally crashed in the panic of 1857. Seeking a way to rid itself of the obligation to do any work at Titusville, it discovered that the title of the Pennsylvania Rock Oil Company was imperfect because the wives of two grantors had failed to sign the purchase papers (if their husbands died, the women would be entitled to dower right). Upon these grounds, Lyman & Havens gave up their lease and removed themselves from the picture.

### E. L. DRAKE

At this point we introduce Edwin Laurentine Drake. When he first entered the story in 1856 he was thirty-eight years old and a fellow boarder with James Townsend at New Haven's Tontine Hotel, at which he had resided since the death of his wife in 1854.

He spent the first nineteen years of his life on farms in New York and Vermont, then left home, having only a common school education and little else but courage to guide him on his way. His experiences over the next several years were varied: for a time he was clerk on a Great Lakes steamer, then worked on an uncle's farm in Michigan, became a hotel clerk in that state, and next clerked in stores in New Haven and New York. Because of the illness of his wife, the family moved permanently to her home town, Springfield, Massachusetts, where Drake was express agent for the Boston & Albany Railroad. In 1849 he became a conductor on the New York & New Haven Railroad and resided in New Haven. After the death of Mrs. Drake he broke up his home and moved to the hotel.



Townsend sold Drake two hundred dollars worth of stock in the Pennsylvania Rock Oil Company of Connecticut, an amount which represented all the savings Drake had. Illness forced him to quit his work in 1857.

After Lyman & Havens gave up their lease, James Townsend was convinced that if anything was to be accomplished, he had better see to it himself. Accordingly, without consulting anyone else, Townsend decided that he should send someone to Pennsylvania, first, to secure the signature of the two ladies to the title to the Titusville lands (which Lyman & Havens had discovered was imperfect), and second, to visit Titusville, inspect the property, and make a secret report.

His friend Drake, now partly recovered from his illness and with a railroad pass insuring free transportation, was certainly the man to do this work. Townsend furnished the money and instructions, and Drake headed for Titusville—and a niche in history for all time.

After arriving at Erie, Pennsylvania, he went to Titusville on the mail stage, traveling over some of the roughest roads to be found. In Titusville he learned that he was now "Colonel" E. L. Drake. Friend Townsend, with a fine flair for the dramatic and with a psychologist's knowledge of what prestige can sometimes accomplish, had forwarded legal documents and other mail to Drake by addressing the envelopes boldly to "Colonel E. L. Drake." From this time on, Drake was a "Colonel" though he actually was never a military man of any kind.

As the next stage from Titusville to Erie was not due for three days, the visitor finished his business and then proceeded leisurely to inspect the oil springs and property, concerning which he was as deeply impressed as Albert Crosby and Jonathan Eveleth had been before him.

On to Pittsburgh went Drake where he perfected the land title by getting the two missing female signatures. Neglectful of no opportunity, he proceeded to Tarentum and investigated the salt wells and operations there, then rushed back to New Haven and proclaimed to Townsend that a future and a fortune were waiting to be made at Titusville.

### THE SENECA OIL COMPANY

With the two other New Haven directors, James Townsend leased the oil springs to Drake and E. B. Bowditch, of New Haven, for a royalty of twelve cents a gallon for oil produced. This arrangement was

started on December 30, 1857, and as soon as it was completed, the New Haven interests formed the Seneca Oil Company of Connecticut.

Incorporated on March 23, 1858, the new firm named Drake, the largest stockholder, as president, although two other New Haven men also held shares. The name of James Townsend appeared nowhere, and yet he was the moving spirit. Oil business, highly speculative in nature, was not the best advertising medium for bank president Townsend.

Drake retained 656 shares of stock and turned back the rest to the parties for whom he had held the shares during the organizational period. Bowditch and Drake signed their lease over to the Seneca Oil Company and Drake was hired at one thousand dollars a year as general manager. It was the largest salary he had ever received. The wily Townsend was now in complete command, for by putting together this new company and by securing the lease from Bowditch and Drake, he had in one stroke eliminated Dr. Brewer, Bissell, Eveleth, and other stockholders outside New Haven from actual participation in the enterprise.

### PROGRESS

At long last definite progress was about to be made. The Seneca Oil Company directed Drake to go to Titusville in order to produce petroleum and made one thousand dollars available to him for expenses.

In May of 1858 Drake, who had remarried, took his wife and two children to Titusville, where they lived at the American Hotel for \$6.50 per week.

Quickly Drake reopened the pits and trenches which Angier had constructed, and six weeks later he reported to Townsend:

Here I am digging along yet in search of oil and other valuables. The month of May was a hard one, and the first eleven days of June, but since then we have had dry weather, so that I have got the start of the water, and am now gathering about ten gallons of oil per day—at the same time sinking a well for the purpose of taking what oil there is on the island.

I have found some difficulty in getting a borer. All were engaged on jobs that will last until fall. Yesterday Dr. Brewer wrote me that he could get one for me at Allegany, who will bore and tube for three dollars per foot, which is the best offer I have had. I wrote the Doctor to send him along at



once. Yesterday I set some men to opening a new spring, so that things begin to look greasy.\*

What prompted Drake to drill an artesian well in order to seek petroleum? Although no absolute answer is possible, it is thought likely that the idea was given to Drake by George H. Bissell. The story is that Bissell paused beneath an awning one day in New York City in 1856 to escape the blazing sun. In the window he saw one of Sam Kier's advertisements resembling a bank note and showing derricks used in boring for salt brine. Closer inspection was made when Bissell went into the store and the druggist gave him one of the circulars. As he studied the circular and looked carefully at the derricks, an inspiration came to him that derricks represented the way to drill wells at Titusville in order to recover quantities of petroleum.

By the middle of August, 1858, Drake told Townsend: "I am satisfied that boring is the cheapest." At this time he had already ordered an engine to be delivered, his pump house was framed, and he asked for another thousand dollars to pay for the equipment and building. Nearly all of that sum was sent to him, part of it in October and the balance in December.

The "borer" about whom Dr. Brewer had written never appeared and so Drake went to Tarentum and hired a driller. The regular drillers were busy, and most of them appreciated too well the virtues of rye whiskey. Drake's man never arrived in Titusville.

The "Colonel" went to Tarentum again late in August, 1858, to hunt his missing employee, but failed to locate him. He contracted with another driller who was just finishing a salt well, but sudden trouble developed on this well and the driller could not get away. Drake could not find another driller and with winter close at hand, he decided to wait until spring; meanwhile he got his engine set up and his boiler connected and everything ready for work.

Anxious about the future task, Drake once more journeyed to Tarentum, this time in February, 1859, and for the third time hired a well driller who, like the others, never appeared. It was little wonder that Drake was now prepared to forget about boring and to write off all drillers as crazy men with no sense of honesty.

Most fortunes change suddenly. Drake received a letter from Lewis Peterson, Jr., of Tarentum, with a recommendation for William A. Smith, a blacksmith of Salina, fifteen miles east of Tarentum, who

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\* Henry, *The Early and Later History of Petroleum*, p. 89.

had previously made tools for the Kier and Peterson wells, who had done drilling, and who had experience in "fishing" for lost tools. Rushing south once again, Drake contracted with Smith to come to Titusville and drill a well for \$2.50 a day. First, Drake bought iron for \$30.80, and Smith made drilling tools from it in his own shop.

When the tools were finished, Drake sent a wagon to Salina; it returned to Titusville carrying not only the drilling tools but also "Uncle Billy" Smith, his fifteen-year-old son Samuel, and his daughter Margaret Jane. The residents did not know it, but the wagon rolling through Titusville on that May day of 1859 was the forerunner of events which changed Titusville and the world.

There was still trouble to be overcome. Drake's men had been digging a hole and cribbing it to prevent "cave-ins," but they could not keep the water out. The well was only 150 feet from Oil Creek and below the level of the stream. No matter how much the pump was used, more water seeped in.

Drake obtained sections of pipe ten feet long from Erie and with a battering ram drove these sections down through the shifting sands and clay. This was the first employment of a drive pipe in an oil well and it is used today in exactly the same fashion. After the six-inch pipe had been put down to eliminate the water, Smith commenced drilling his well through this pipe, with the operations starting in the middle of August.

Slowly, sometimes less than three feet a day, the drill went downward. It was impossible for Drake to have missed the jibes of the local residents; there was a supreme lack of confidence in the entire venture, with even the astute Dr. Brewer regarding Drake's work as a great joke. To add to Drake's problems, the New Haven people, after having put nearly \$2,500 into the experiment, decided not to risk more; Townsend directed Drake to pay all bills and to close down the work. But before receiving this word from Townsend, Drake had borrowed five hundred dollars from the Dick Bank at Meadville, Pennsylvania, because he was without funds; his two closest friends, Peter Wilson and R. D. Fletcher, endorsed the note for him.

## SUCCESS

Work was stopped Saturday afternoon, August 27, at the well; late in the afternoon of the next day "Uncle Billy" was inspecting the

well and saw an oily fluid close to the top of the pipe. He made a rough tube and lowered it and what he brought forth was black gold.

"Uncle Billy" was excited at his sudden discovery of final success and sent his son to the Upper Mill where he yelled at the workers, "They've struck oil!" The mill operations stopped and some of the workmen rushed to the derrick to see what had happened. They saw Smith dipping out oil faster and in larger quantities than they had ever dreamed was possible.

The news spread along the stream and into Titusville, but "Colonel" Drake did not get to the well until the next morning. When he did arrive, he saw Smith surrounded by barrels, tubs, and jars filled with oil. Drake tested the well himself and was pleased with the results, but he was not excited. He was calmness personified. Titusville now changed its collective mind, happy in the fact that the smart "Colonel" had struck oil nearby.

It was nearly two months after the event that New Haven papers carried the news, as the stockholders there wanted to be certain that the supply of oil would not be exhausted within a few days.

Fortunate indeed was the timing of Drake's discovery—it came when the nation was about to become embroiled in war and when mechanized expansion was beginning. Drake happened to drill in the only spot in the oil country where he could have found oil at a depth as shallow as sixty-nine feet.

This gift from Divine Providence and the skill of man stands, after more than a century of use and testing, as one of man's most useful servants.

# *Map of the Region About Oil Creek*

## KEY TO THE MAP

This explanation of the map on pages 20 and 21, which shows the oil-producing lands in the region of Oil Creek, Venango and Crawford counties, northwestern Pennsylvania, will help the reader locate sites mentioned in the accounts reprinted in this volume. Oil Creek was the center of the oil producing industry for a decade after the drilling of the first successful well at Titusville in 1859.

1. The first oil refinery on Oil Creek, spring of 1860, had a capacity of not more than fifteen barrels.
2. The Barnsdall Well, drilled by the spring-pole method, February 18, 1860, had a depth of 112 feet.
3. Abbott Refinery, first refinery of importance on Oil Creek, was built the spring of 1861.
4. The Drake Well.
5. The Shaffer Farm Station was the terminus of the Oil Creek Railroad in 1865.
6. The Sherman Well, located on the Foster Farm, a 2,000-barrel well, struck oil in March, 1862.
7. The famous Noble and Delamater Well, Farrel Farm, May 27, 1863.
8. The Caldwell Well, a gusher which was drained by the Noble and Delamater Well, struck oil March, 1863.
9. The Fertig Well, second flowing well from the third sand, July, 1861.
10. The Fountain Well, first of the sand gushers which astonished the world, May, 1861.
11. Residence of John Benninghoff, who was robbed of an oil fortune on January 16, 1868.
12. Petroleum Center was surrounded by flowing wells, 1863-1870. They have vanished completely.
13. The McCray Farm was a great oil producing property for which the owner once refused a million dollars.

14. The Story or Columbia Farm was a very well managed piece of oil property and gave Andrew Carnegie his financial start.

15. The James Tarr Farm. Gusher wells from this farm swamped the flats and depressed the oil markets, September, 1861.

16. The Rynd Farm was the first farm to be leased, September 1, 1861, after Drake's strike.

17. The Widow McClintock or Steele Farm, of Coal Oil Johnny fame.

18. The first costly fire in the oil region, the Rouse fire, April 17, 1861.

19. An ancient oil spring was located on the Hamilton McClintock Farm.

20. The Humboldt Refinery, most romantic refining enterprise in early oil history, 1862-1868.

21. Plumer, a busy oil center in 1864 and 1865.

22. Hyde & Egbert Farm. The Maple Shade, Coquette, Jersey, and other gushers made history on this small triangle.

23. The first successful pipeline, from Pithole to Miller Farm, October, 1865. It reduced transportation costs for oil and spelled doom to the teamsters.

24. The United States Well, January 8, 1865, the discovery well that led to the birth of Pithole.

25. The Homestead Well, Hyner Farm, at Pithole. John Wilkes Booth once owned a small interest in this well.

26. Shamburg, an oil boom town of 1867-1870.

27. Red Hot, another "hot" oil center in 1868-1870.

28. The Harmonial Well started the Pleasantville oil excitement. Located by a spiritualist, it was also called the Spirit Well.

29. The Pithole waterworks reservoir, November, 1865.

30. The Island Well, McKinney Farm, 1865.

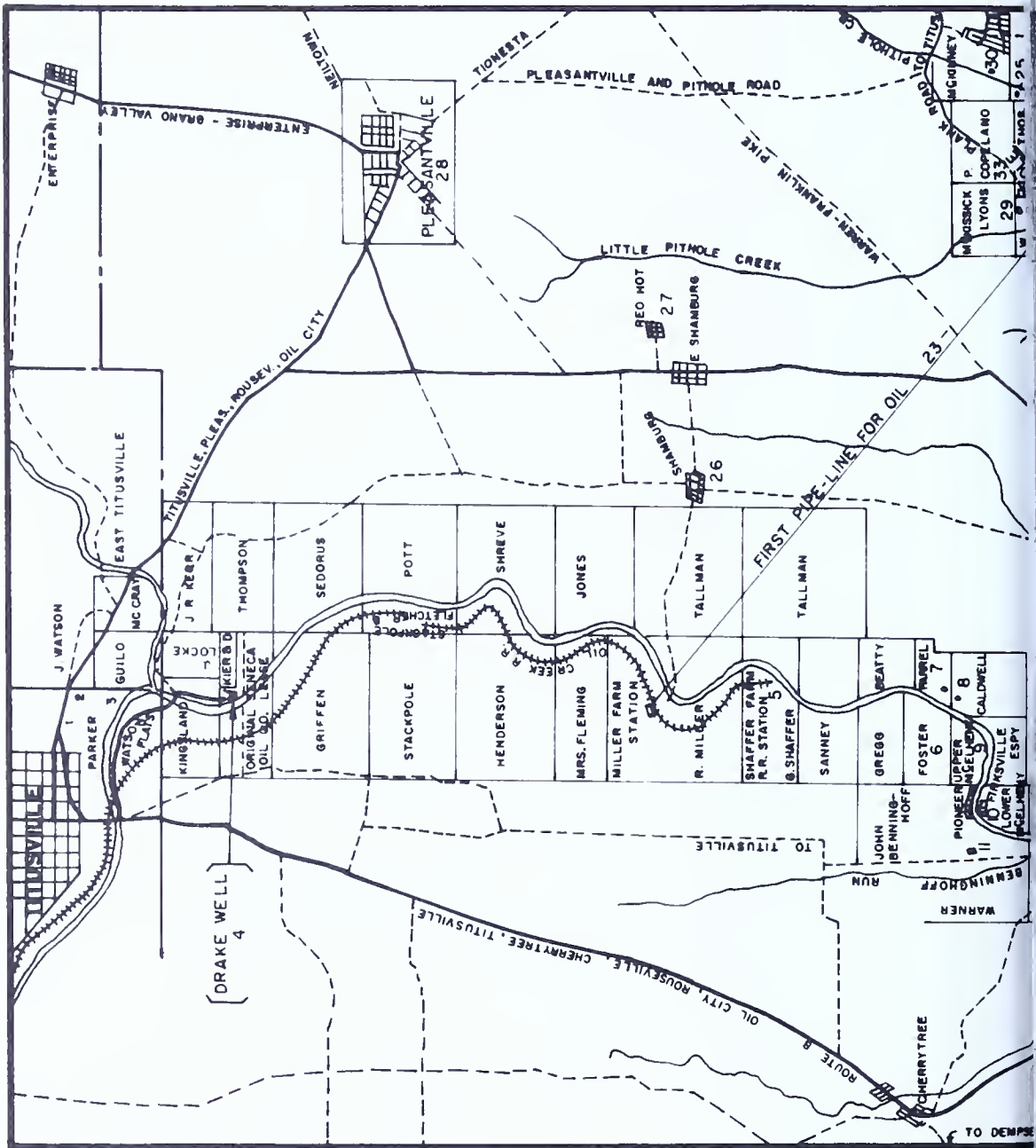
31. Prather City, a Pithole suburb. The Bonta House, a famous hotel, was located here. Later it was dismantled and used to construct the home of Ida Tarbell in Titusville.

32. Hunky-Dory, a notorious hole of iniquity, 1865-1867.

33. Site of the Morey House, another famed Pithole hotel. It was burned by an incendiary in 1866.



# The Region About Oil Creek--





# Birthplace of the Oil Industry



Map prepared by Joseph Murray for Diamond Jubilee Oil Edition of the *Titusville Herald*, 1934; redrawn for this book under the direction of William S. Lytle of the State Topographic and Geologic Survey.



*Contemporary Accounts of  
the Petroleum Industry*



## [The Oil Pits Before 1848]

The best description of the oil pits found along Oil Creek was provided by William H. Davis, Esq., in a lecture, "Crawford County and Its History," delivered before the Meadville Literary Union on February 18, 1848. That lecture, part of which follows, was published in the *Crawford Democrat*, Meadville, Pa., April 1, 1848.

A short distance below the village of Titusville, in this county, and on the west side of Oil Creek, there are perhaps about two thousand pits, scattered over a level plain not exceeding five hundred acres. Some of these are very close together, as close as the vats in a tan-yard, which they somewhat resemble, each having been about 7 or 8 feet long, 4 feet wide and 6 feet deep.—These pits or vats had all been nearly filled, some of them entirely so, by vegetable deposit, perhaps the accumulation of ages.—The mounds raised at the side of each pit by the excavation of the earth from it, are distinctly visible. Close upon the margin of many of them, and upon the very mounds made by the earth, trees whose size and appearance indicate an age of two or three hundred years, are found growing. Those trees could not have existed at the time those vats were made, for it is reasonable to suppose that those engaged in making those pits, would either have commenced their labor so far from the standing timber that they would not be obstructed by the roots, or would have cut the timber down. Another thing affording an index to the time when these vats may have been made, is the fact that when the inhabitants now in their vicinity first discovered the pits from their regularity in size and the order of their location, by the indentations of the surface and the general appearance of the mounds, they were induced to open them. On doing so they discovered that each pit was of the size before mentioned and walled with logs, regularly cut and halved at the ends so that they could lie close together, thus preventing the caving in of the earth. Now there are no evidences on the ground showing where the logs used in walling the pits were cut. And although the whole flat is at this day covered with standing timber, not a stump remains to show that the axe-man had ever been there prior to its visitation by the whites. Many of these pits have recently been opened, and all were found to be about the same depth, fashioned and walled nearly exactly alike. Whether it was curiosity or cupidity that induced this investigation, I am unable to determine—but certain it is, that when excavated to the bottom of the log wall, it was found that

water raised in the pit, to the depth of four or five inches. On visiting the pits a day or two after the excavation, it was ascertained that the water in them was covered with oil to the thickness of one third or one half an inch. This at once demonstrated the use to which they had been applied:—they had been used for gathering what we now call “Seneca Oil,” and the number of pits shows clearly that whoever engaged in it, had, to use a modern expression, “gone into a wholesale business.” It also proves another thing, that those pits were not made by the Indians. Their regularity, their number, their being walled with cut logs, halved at the ends, the averseness of the Indian to labor, all forbid the idea that he could have been their creator. Besides this the Indians, as I have been informed, have no traditions respecting them, at least none more satisfactory than they have of the mounds and fortifications found throughout the west. Nor could these evidences of former occupancy, have been made by the French. The number of the pits proves that many persons must have been employed in collecting this Seneca Oil. The French were an enterprising, warlike and intelligent people. Had they been the operators, here we would have found, perhaps, an old fort, or the ruins of a village.—They would not have been in such numbers and for such a length of time, in a particular district of country, as the works indicate that they must have remained, without the means of protecting themselves from the wild man of the forest. In addition to this, the French did not take possession or visit our county, till about the year 1752; whilst the trees, mounds and pits, indicate a much greater age, than would be allowed them by assigning that period for their construction. And more than all, the French have no records, as I have been credibly informed, showing that they had any knowledge of the article obtained there, and now called Seneca Oil. It is well known that their occupation of this country, was a military occupation. And by the rules of their military code, every thing of note in which each portion of their army was engaged, would have to be reported, and would be now found on file in the war department of France. Is it probable that so many soldiers of the French army as must necessarily have been engaged in this business, for the requisite length of time, could fail to have been reported to that department, especially in a matter which must have greatly excited their curiosity as well as their desire for gain? They were not made by the French. They were not made by the North American Indians, but in all probability, were made by that people who erected other mounds and fortifica-



tions, towns and cities in the valley of the Mississippi. Their appearance bears the same age and justifies this conclusion.

Other evidences might be referred to, to show that our country was inhabited by another race of people than those who were found to be its occupants by the French.—I refer to the mounds, which now exist in various parts of the county. Some are found on Crooked Creek, some on Shenango, some on Conneaut Creek, some on French Creek and one near this Borough, on the land of the late Cornelius Van Horne, Esq. Some of these have been opened and found to contain human skeletons, and all are considered to be receptacles for the dead. Now it is not the custom of any of the present Indian tribes to erect mounds over their dead, at least no instance of the kind has been noticed since they have come in contact with the Anglo Saxon race. Where they exist comparatively free from the influence of the white man, and where we would suppose their own national customs to remain in full force, they erect a scaffold and place their dead upon that, leaving the inanimate body to be visited by the winds of Heaven and the fowls of the air.

### Artificial Illumination—Burning Fluids

The need for better burning oils for lighting purposes is well explained in an article, reprinted here in part; after introductory remarks, the article proceeds to examine oils made from cannel coals and other products. It appeared in the *Scientific American* of January 2, 1858 (Vol. XIII, No. 17.)

From some kinds of bituminous coal a sub-spirituos oil is now manufactured, which is fast coming into popular favor, owing to the improvements which have recently been made in the means of purifying, and in the lamps designed for burning it. It is but a few years since it was first discovered that oil could be distilled at a low temperature from rich cannel coal, and now this oil is almost exclusively employed for lubrication in Great Britain, while it is extensively used both for lubrication and illumination among our people. Vast beds of the rich coal from which this oil can be obtained exist in Pennsylvania, Ohio and Kentucky, affording sources of supply for thousands of years to come. This oil passes over in a very crude state, incapable of being generally employed for burning on its first distillation; but by the use of sulphuric acid, the bichromate of potash, several washings and distillations, it is purified so as to afford a most brilliant light in an argand burner. Coal oils are very peculiar; a very

clear oil will come over in small quantities at a comparative low heat during distillation; then as the temperature is raised, a greater quantity comes over, but it is thick and viscid. All these oils are liable to become red in color by exposure to the air, and they have an offensive odor.

Rectified turpentine, under the name of *camphene*, which is very cheap, has been tried for illumination, and judgment passed against it. It requires, like coal oil, an argand burner, and even with the greatest care it is liable to smoke, and fill up the meshes of the lamp-wick with resinous matter. Rosin oil, although very cheap, labors under the same disadvantages.

It is a remarkable fact that while all the animal oils may be burned in common lamps, very few of the vegetable oils can be so used. The great defect of most vegetable oils for burning is their gummy nature, which causes them to clog up the meshes of the wick, and give out only a dull reddish and smoky light. The two vegetable oils capable of burning, in lamps, are made from the olive, and the seed of the *brassica napus* (rape seed). This oil is capable of rivaling sperm for giving a brilliant light. Patents have been taken out for purifying linseed, cotton seed, and sunflower seed oils, to adapt them for artificial light, but hitherto none of them have come into general use; the processes pursued to purify them have either been inefficient or too expensive. Neither the olive nor the rape are cultivated for oil in our country, yet the former may and should be, for its beautiful oil, in our southern States, and the latter for the same objects in all our States. In France and Germany, rape seed is extensively and profitably cultivated. The oil exists ready formed in the seed and is extracted by pressure, like other oils obtained from seeds. The seed is first ground to meal, then heated to 200°, placed in bags, and submitted to very severe pressure. As the oil comes from the press, it contains some mucilage, which must be removed to fit it for burning. This is accomplished by stirring about two per cent of vitriol among it, washing with water in vats, and afterwards filtering it. The sulphuric acid unites with the mucilage of the oil, and falls down as a heavy precipitate; the oil floats on the top of the water after standing a few days, and is then drawn off by a siphon or tap. This oil, which can be employed in common lamps, illumines the lighthouses on the French coast, which are said to be the best lighted in the world. It is, at least, an oil to which we wish to direct attention, in order to induce some of our people to introduce a useful manufacture.

We are well aware that, several years ago, at the suggestion of the Lighthouse Board, a quantity of rape seed was imported, and was distributed through the Patent Office for culture; but in our opinion, the experiments made to cultivate it were not properly conducted, or else the Lighthouse Board would have been supplied with *colza* oil (as was their object) before the present time. As this oil is of a superior quality for lamps, neither one failure nor a number of them should discourage efforts for its development among our people.

## Discovery of a Subterranean Fountain of Oil

The first published news of Edwin L. Drake's successful well, which struck oil August 27, 1859, appeared in a letter signed "Medicus." The author might well have been Dr. F. B. Brewer. The brief item was printed in the New York *Semi-Weekly Tribune* and the New York *Daily Tribune* on the same day, September 13, 1859.

Correspondence of The N. Y. Tribune.

TITUSVILLE, Penn., Sept. 8, 1859.

Perhaps you will recollect that in 1854 there was organized in the City of New-York a Company, under the name of the Pennsylvania Rock Oil Company, which, for some good reasons, passed into the hands of some New-Haven capitalists, and was by them removed to New-Haven. In 1848 [1858], the Directors leased the grounds and springs to Mr. E. L. Drake, well known on the New-Haven Railroad. He came out here, and in May last commenced to bore for salt, or to find the source of the oil, which is so common along the banks of Oil Creek. Last week, at the depth of 71 feet, he struck a fissure in the rock through which he was boring, when, to the surprise and joy of every one, he found he had tapped a vein of water and oil, yielding 400 gallons of pure oil to every 24 hours (one day).

The pump now in use throws only five gallons per minute of water and oil into a large vat, when the oil rises to the top and the water runs out from the bottom. In a few days they will have a pump of three times the capacity of the one now in use, and then from ten to twelve hundred gallons of oil will be the daily yield.

The springs along the stream, I understand, have been mostly taken up or secured by Brewer & Watson, the parties who formerly owned the one now in operation.

The excitement attendant on the discovery of this vast source of oil was fully equal [*sic*] to what I ever saw in California, when a large lump of gold was accidentally turned out.

MEDICUS.

## The "Oil" Discoveries

The oil excitement proved a boon to many towns in north-western Pennsylvania, and companies were quickly organized to sink wells. This report is from Franklin, Pennsylvania. It was published in the Erie, Pa., *Weekly Gazette*, October 6, 1859. The writer has not been identified.

FRANKLIN, PA., Sept. 27.

MESSRS. EDITORS:—You will recollect that Seneca Oil has been gathered in our region, in small quantities, for very many years. In fact, the early settlers in this country found large pits sunk in the ground along the margin of Oil Creek, when they moved into the country, evidently prepared for the purpose of collecting the oil. And for a half a century, it has been collected in small quantities, in the most primitive method. The usual way of gathering it was, to dig a pit near the creek, or during low water, in the very bed of the creek, and when this had filled with water and oil, blankets were thrown on and saturated. These blankets would take up the oil, which was then wrung into vessels.

The oil can be seen, oftentimes, rising in the form of small bubbles, through the water. Coming to the surface, it spreads out and produces the prismatic colors in great beauty. The appearance of oil is not confined, however, to the creek. It oozes from the ground, all around the country. In at least two wells in this place it arises in such quantities that the water becomes nauseous in time of low water. It has long been suspected that this oil might be found in quantities, and many attempts had been made to make it profitable. Very little however was accomplished until the present season.

In the Northwestern part of this country, near Titusville, a shaft was sunk that has produced most astonishing results. The story is well nigh akin to some of those related by Sinbad the Sailor. I believe the object of the adventurer, was to discover salt. After sinking to the depth of seventy-one feet, the drill suddenly sunk about five feet. On applying the pump, water mingled with oil came up freely. It was ascertained to be one part of pure Seneca Oil to four or five

of water. After operating for a time, the supply was found to be in proportion to the capacity of the pump. This single pump is now bringing to the surface about forty barrels of oil per day, worth in the Eastern Cities one dollar per gallon.

There seems to be no diminution to the supply, and the only difficulty appears to be, to get vessels to contain it until it can be sent to market. Think of 1200 gallons of oil drained from the earth's caverns each twenty-four hours, at an expense of some six dollars, and visions of Pike's Peak will no longer dazzle your vision!

A company is now organizing in this place, whose object is to test the theory as to the presence of veins of oil beneath the bed of our valley. We are not a very excitable people, but we do feel some interest in the oil question. Indications are certainly favorable. At the time the locks of the Franklin Canal Company works were constructed, it is said that some two barrels of oil were taken from the pit sunk for the outlet lock.

If anything new should turn up in this matter, I may let you know, provided you take interest in the oil question.

Yours, &c.,  
S. M. E.

## The Oil Springs

The previous report from "Medicus" that appeared in New York City papers on September 13, 1859, apparently brought many inquiries and prompted him to supply additional facts. His second contribution was in the New York *Semi-Weekly Tribune*, October 7, 1859.

*To the Editor of the N. Y. Tribune:*

SIR: Publish an article in THE TRIBUNE, and *presto*, the "wide, wide world" are in possession of the facts. Since the communication published in the "Weekly," over the signature of "Medicus," I have been deluged with letters of inquiry, from all parts of the country, relative to the "Oil Springs;" and as nearly all refer to THE TRIBUNE as the source of their present information, I naturally infer they are your own subscribers. Therefore, for my own convenience and their information, I will answer them through your columns.

The Spring is now yielding 500 gallons of crude oil per day. There seems to be no diminution of the supply however much the speed of



the pump is increased. There is land for sale, containing as good *superficial* indications of Oil Springs as that where now in operation. The nearest railroad point is Union, on the Sunbury and Erie Railroad, twenty-five miles from Erie, Penn., then by stage twenty miles to Titusville.

We see many strange faces in our quiet village, and we are happy to see them; at least, I know the hotel keepers are, if I may judge from their pleasant countenances, or the kind attentions to their guests.

“MEDICUS”

*Titusville, Pa., Oct. 1, 1859.*

## Our Journey

Thomas S. Chase, a former resident of Titusville, took his wife on a honeymoon and they visited the Drake well. A part of Chase's article, dealing with oil, is reprinted here from the *Potter Journal*, Coudersport, Pa., October 13, 1859. Chase was the *Journal's* editor.

After a brief rest, we visited the famous Seneca Oil Spring which has recently created so great an excitement and wonder in the outside world. The sensation of seeing and smelling the oil was nothing new to us—we were born and bred there. The oil has been gathered from surface springs and used in that section of country ever since its settlement, the Indians and the French having opened and worked a large number of springs near the present site of Titusville many years before any English settlers found their way there. The oil never had an outside market until now, though the “Pennsylvania Rock Oil Co.” have, we believe marketed a quantity of the Surface-Spring product in New Haven, where the office of the company is. In 1858, as stated in the JOURNAL two weeks since, the company leased the spring (for which they paid Brewer, Williams [Watson] & Co. \$5,000,) to E. L. Drake, who was to gather the oil at his own expense and pay them 12½ cents a gallon for it. His lease was for 15 years, with full privilege of working at his option.

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Other parties along the stream have also bored for oil, and have found it at various depths, the least of which was 6 feet, on the farm of Mr. John [Jonathan] Watson, in Titusville borough, ¾ of a mile from the village. After one foot of soil had been removed, a strata of



31½ feet of potter's clay was bored through—that also being a new discovery. Another spring was tapped about 28 feet from the surface, on the farm of J. Parker, about ¼ of a mile from the village centre, and opening through one of the old springs worked by the French and Indians, of which there are a large number at that particular point.

As a result consequent upon this discovery, real estate and leases with privilege of boring till oil was found, were each held at great prices. We heard of one instance in which \$20,000 was offered and *refused* for a half interest in a lease of 15 years on one hundred acres!; and we know of several fourth interests in leases at a distance of two or three miles from the working spring, being sold for \$2,500 and \$3,000. The tract of land on which the large spring has been opened by Mr. Drake, was once purchased by the father of the writer of this article for a cow, and previous to that had been sold at treasurer's sale for taxes. Now we believe \$100,000 would not buy one acre of it. Men until now barely able to get a poor living off poor land are made rich beyond their wildest dreaming.

The properties of this oil (a bottle of which we brought with us, and may be seen at this office,) are medicinal, (for internal as well as external application), illuminant, (giving a strong light,) and is one of the best oils for lubricating machinery ever used, as it never gums.

## Destructive Fire

Drake's original derrick and well house burned to the ground on Friday, October 7, 1859. No photograph of the first Drake well is known to exist. The disaster was given publicity in the *Pittsburgh Daily Gazette*, October 15, 1859.

The Oil Works of Drake & Co., of Titusville, Crawford county, were destroyed by fire on Friday last, together with vats containing 200 barrels of Coal Oil. The fire was caused from a lamp in the hand of the foreman, who was going carefully around the works examining that all was right. The gas from the pump came in contact with the candle, causing instantaneous combustion and wrapping the works in flame. We sympathize with the enterprising proprietors in their severe loss. We understand that they sent immediately for an engine, and will have their works again in operation next week. Their enterprise is commendable, and we wish them all success.

## From Union Mills

Small towns surrounding the oil region suddenly were flooded with unexpected activity. Union Mills, later called Union City, was an example. Wells were drilled in many of these villages, cooperage works erected, some refineries came into being, and transportation was a major industry. This report is from the Erie, Pa., *Weekly Gazette*, May 31, 1860.

UNION MILLS, May 22, 1860.

MESSRS. EDITORS:—Not observing for some time past any thing in the shape of a communication from this place, I have determined to address you a few lines with a view to keeping some of those persons who do not know there is a place in Erie County called [“]Union,” posted not only as to that fact, but also in order that they may know of some of the new developments that are taking place.—In the first place, the Oil well upon the premises of P. G. Stranahan is now at the depth of a little over 200 feet, with brilliant prospects of complete success. This is a matter in which we all feel a deep interest; and as a step further in the way of progression, the Pennsylvania Rock Oil Refinery Company have procured ground and contracted for the erection of their main building to be completed by the middle of next month. Mr. Parsons, the Manager of the Company, says the works will be capable of refining fifty barrels per day. The intention of the Company, I believe, is to purchase the crude Oil, and refine the same for market on their own account. This will enable small producers to realize before starvation stares them in the face. Also, a new firm has sprung into existence of the name of Clark, Andrews & Co., who have recently purchased a complete set of machinery for making Oil Barrels, Flour Barrels, Firkins, &c.; and have begun the work of getting their water pond and building in readiness for the same. The whole thing, when complete, will cost about \$4,000, which, when done, will be capable of turning out from eighty to one hundred Oil barrels per day, and when running upon Flour barrels double that number. This, in addition to the Shovel Handle Factory of Sherwood & Co., we think will add somewhat not only to the credit of Union alone, but to Erie County. The truth is, at this time we are so much taken up with business, that the political affairs of the day are hardly mentioned; but an occasional word is dropped upon the subject as to who will be our candidate the coming fall for County Treasurer.

The thought then comes stealing quietly over us that we shall be enabled to present the name of an individual to the Convention for nomination who is not only deserving, but well qualified to take that position, and we shall most decidedly ask it modestly, but firmly. H.

## Laona Oil Spring

Pennsylvania was not the only state in which prospectors were boring for crude oil. Soon men in other areas were experimenting with wells. An early attempt in southwestern New York state was described in the Fredonia, N. Y., *Censor*, July 18, 1860.

The boring for oil, by the "Laona Oil and Mineral Company," was commenced on Monday of last week, on the quarry lot leased by the Company, of B. Perham of Laona. Messrs. E. W. Ramsdell, D. S. Ramsdell, and P. L. Eaton have the contract for sinking the well as deep as may be deemed necessary to go. Up to Monday evening of this week—after seven days labor only—they had attained a depth of 48 feet, chiefly through slate rock. Gas is now found quite abundant, and persons well qualified to judge, consider the prospect quite favorable for an abundant supply of oil, within, at most, adepth [sic] of 300 feet.

We believe that none of the oil wells in the vicinity of Titusville have made such rapid progress in their "downward course," as this, and should not be surprised if the labors of the Company should meet with much success.

## A Yankee Editor Visits ye Oil Region, Taketth ye Fever and Writeth a Letter

Visitors to the early oil region were often afraid the folks back home would not believe their stories. The editor who wrote the following report thought his readers might think he was deceiving them. This appeared in the *Venango Spectator*, Franklin, Pa., August 1, 1860.

[Editorial correspondence of the Auburn (N.Y.) Advertiser.]\*  
Franklin, Venango County, }  
Pennsylvania, July 18. }

I hardly dare to record what I have actually witnessed for fear our readers will charge me with an attempt to practice a fraud and a deception upon them. I will, nevertheless proceed to note down what I know from *personal* observation to be *true*. Arriving in the village of Franklin on Thursday, the 12th inst., I have spent five *working* days in visiting the various wells in successful operation, and in witnessing the process of boring for the oil.

The village of Franklin is situated on French Creek, just above the point where it empties into the Allegheny River. The town is surrounded by mountains, whose elevation must be from 300 to 500 feet above the valley in which it is located. It is an old and dilapidated village, and had it not been for the discoveries of oil, must have remained, for all time to come, unheralded, and almost unknown, except to the inhabitants of its immediate vicinity. The locality is, nevertheless, picturesque in the extreme, and when a flourishing village or city is erected here, and a railroad is constructed through its limits, as will most assuredly be the case if the oil continues to flow, even in its present quantities, it will be a most attractive spot.

Within a mile of the centre of the village there are now in process of boring and in successful operation, over one hundred oil wells. Thirteen of these wells are already finished and are producing oil. In eight of them pumps are at work. Six wells have been sunk to the usual depth, and no oil. The amount of oil pumped daily varies in different wells. The Evans well, which was the first bored in this vicinity, yields from eight to ten barrels per day. This well was the one about which such glowing accounts were published in the news-

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\* Bracketed in original.

papers soon after its discovery. The statements were then made that it yielded from ten to fifteen barrels per day. These were not only considered extravagant stories, but the general impression was that they were made out of whole cloth—that there was no truth in them. The idea that by boring a hole seventy feet deep in the earth, and four inches in circumference, oil could be extracted to the amount of ten barrels per day was so utterly preposterous that but few indeed could be made to give a moments' [*sic*] attention to the subject. And now what will our readers say when we tell them that there are wells in this county from which *forty barrels of oil* have been pumped in a day, and whose average yield it is believed will be from thirty to thirty-five barrels a day.

The average of the ten wells now in operation in this vicinity is about twelve barrels per day. The depth which is usually reached before oil is discovered in paying quantities is about 250 feet. The wells now being sunk here have none of them reached that depth. But in almost every one of them strong indications of oil are seen, and the owners are full of hope and encouragement that they are to succeed. Two wells have favorable [*sic*] developed themselves since our arrival here. We paid a visit to one of these on the first day of our arrival. The owners had reached to nearly the depth at which oil is found, and trembled with anxiety as to the result.—They were men in very moderate circumstances, and if they failed after spending three or four hundred dollars in boring it would be a serious loss to them. Their anxiety, therefore, for the result, may be imagined. On Friday morning the owners of this well would not have been considered responsible for a debt of five hundred dollars. On Friday afternoon they could have obtained credit to the amount of *twenty thousand dollars*.—They had found oil, and in a moment had stepped from *poverty* to *wealth*. It is said that there is but one step from the sublime to the ridiculous. In this locality scores are passing from poverty to wealth in a single hour.

The excitement of the people is up to fever heat. And it is not strange that it should be. The citizens of the town see that what they considered one year ago, to be a village which had reached its full growth, is destined to become one of the most important points in the whole State. Unless there is a failure of the oil, Franklin, in less than one year will contain four times its present number of inhabitants and its capital and business will be increased an hundred fold. The great drawback now is the want of facilities for getting the oil



to market. Steamboats run up the Allegheny to this point during the fall and spring months, but they will not be capable of doing a hundre[d]th part of the freighting business. A Railroad through this section would, even now, pay fair dividends to stockholders. It is about forty miles from this village to the nearest point of the Pittsburgh and Erie Railroad.

It would be impossible to state accurately the *market* price for oil wells in successful operation. They cannot be bought at any figure that capitalists would be willing to pay. Ten, fifteen, twenty, thirty, forty, fifty and in some cases a hundred thousand dollars would be offered in vain to their owners, for a deed of their wells. The operators here, are, as yet, men of limited means—those, generally, who have long been residents of the town. Capitalists, however, begin to come in, and the capacity of the hotels is already pretty thoroughly tested.

The excitement has evidently much increased within a few days, owing, no doubt to the recent success of the two wells to which we have referred. We predict that within two months from this time the news from this locality will start thousands of men in this direction. California never, in its palmiest days, offered as great inducements to men seeking fortunes as the oil regions in Venango county.

The quality of the oil procured is good. It sells readily in New York for 30 cents per gallon in a crude state. After refining it is said to be superior to the Kerosene oil for all purposes for which that article is used. It's [*sic*] illuminating properties are excellent, as we can attest by actual observation.

The manner of boring wells is by drills similar to those used for boring for salt. Many of the wells are bored by steam power. After oil is found the well is tubed, and a steam engine is put to work pumping. The oil is run off into vats holding from three hundred to five hundred barrels. From these vats it is drawn off into barrels. The barrels hold forty gallons. There is great difficulty in getting them fast enough to accommodate the oil. A well that yields 40 barrels a day is now lying idle because the proprietors cannot procure barrels in which to put their oil.

For fear our readers will think us tedious, even while writing on so *oily* a subject we will draw to a close by relating an anecdote about the discovery of oil in this village thirty years ago. It was told to us by "one of the oldest inhabitants," yesterday.—He said that a certain gentleman, a Judge now living in the village, employed



a laboring man, about thirty years ago to dig him a well for water. After getting down nearly thirty feet the laborer struck a vein of oil which flowed in so fast that he was compelled to leave the well. The Judge and his well digger attempted by various means to stop the oil from flowing in, but every thing proving unsuccessful the well was abandoned, not however, until the Judge had expressed his indignation pretty freely, and in no very choice language, against the "nasty, stinking Seneca oil," as it was called. On the site of this old well there is now an oil well worth anywhere from thirty to forty thousand dollars. The Judge having made a dozen fortunes by the sale of oil lands since the excitement commenced, is now a great admirer of the "nasty, stinking Seneca oil."

## Tidioute and the Oil Again

One of the first boom areas following Drake's successful well was at Tidioute, a small village seventeen miles northeast of Titusville. Around this lumbering town, hugging the bank of the Allegheny River, early wells on both sides of the river and on a large island in its center proved to be exceedingly productive. As Tidioute was in Warren County, a Warren newspaper editor traveled down to observe the excitement and to inform his readers. His interesting account appeared in the Warren, Pa., *Mail*, September 15, 1860.

We went to Tidioute again on Friday last. The roads were just as bad, the scenery as varied and Patterson's cigars as agreeable to smokers as before. Hauling up at Eddy's in Tidioute where we found a little less than half of Warren and the rest of creation congregated, we made a rush for dinner and then for the Island to see the Ludlow well—the second spouting wonder of that slippery region. We have before stated that the upper end of Tidioute Island belongs to A. W. Ludlow of Warren and W. T. Alcorn of Tidioute. A well was started there three or four weeks ago by a Tidioute company among whom are Judge Brown, Arthur McGill, J. L. Grandin, Dr. Kemble and perhaps others. They drove pipe 40 feet and drilled 28 when the oil run [*sic*] over the top. After putting down a pipe and shutting off the water it began to spout clear oil tremendously, running from eight o'clock on the evening of the 4th till 5 o'clock the next day when they made out to plug it up.—With hurried preparations for catching the oil they saved about 100 barrels. But a great deal was lost. The ground and shrubbery for rods around are completely saturated with the oil—making the best "surface indications" we have seen.

We got there about 2 o'clock in the afternoon with many others to see the animal perform. It had been running in the forenoon and the barrels and tubs were full. A large vat, big enough for a colony of small boys to swim in, had just been completed and was partly filled. Mr. Ludlow was there for the first time to see it. Of course we all said let her run, and so did he. The man in charge with a clean shirt on said it had just been plugged, and we must wait till it gathered gas—then he would show us a tall performance. Pretty soon he pulled the plug with his shirt off! Not a drop!—No gas! Stranger yet! What *could* be to say? The crowd [*sic*] laughed—told him it was played out—they must lug more oil from Hequembourg's and fill the hole—his great squirt was a humbug, and so on. He began to sweat and look red—clear to his waist bands! We bargained with a boy to ferry us over to the Hequembourg well[,] where they *had* oil not second handed!—Ludlow said we'd better hold on. He guessed they hadn't any oil but we'd see how they were going to slip out of the scrape[.] Presently they ran down a long pole to stir the "critter" up. There upon it began to "splurge," and such a sizzling, and spluttering and rumbling and squirting you don't see outside of oildom. It ran with a pulse-like but diminished force, they said, about a gallon in 10 seconds, gradually diminishing till they could plug it, when the plugger went to the river to soap and wash and we went to see

#### THE HEQUEMBOURG WELL.

This happened to be in full blast. It had just been started with the hand pump and was running a big stream into the vat. The engine was being put up and in a day or two they expected to test the full capacity of the well[.] The engine is a large one and we presume it will do a big business.

The Vosburgh well jest [*sic*] below was pumping considerable water and but little oil.—Towner & Co. a few rods below that, have oil in one well and are waiting for a pump and engine. So are Waters and Jackson just above. The others on the Cohell farm are all kicking away yet with a little show and any amount of hope and patience.

The King well on the other side of the river has a new pump and has increased the flow of oil to 16 or 18 barrels a day.—Within sixty rods of this 23 wells are going down. One next below, owned by Mr. Wright of Wrightsville, is considerable greasy; one a short distance above is deeper and slipprier [*sic*]; the balance show little or no oil yet.

On the Island, Rogers is putting another well down and getting ready to pump the first one. This they say can hardly hold still but boils up occasionally over the top of the driving pipe and threatens to make a "splurge" on its own hook. The well at the mouth of the run don't bring forth much oil yet.

Above, below and in the vi[l]lage, other wells are constantly going down, but these are all that warrant pumping yet. Some changes of title have lately been made, but none worthy of public notice. Some borers are getting sick with a "good show" of being sicker before they are richer. We can't resist the conclusion that the greater portion of them are driving their ducks to a lean market. The excitement has been too high. People have staked their all too greedily and recklessly and many of them are bound to loose. Tidioute will be benefitted of course. The landlords and the laborers will have full employment at high figures. But few of the people there risk anything. Most of the operators, indeed all the lucky ones except a few in the Ludlow well, are from other parts.

A Refinery is being put up near the lower end of town by a company from New York State. The building is nearly done and the machinery is going in. This will doubtless be a source of profit to the proprietors and a great convenience to the oil owners. Let enough of them be built in this section of the country and dealers in other oils in the cities can no longer control the market of Seneca oil. Joint stock companies composed of those who own paying wells, might be formed who could erect their own refineries and thus not only control the trade but save a vast amount of transportation. Suppose one were put up here, another in Erie and in Titusville and Pittsburg the cost of refining would be greatly reduced and the article afforded cheaper to consumers than it can be while going through the hands of the city dealers. We are told that no such thing as Seneca oil is known among consumers in Boston.—A little of the Breckinridge oil is mixed with it and the whole goes into market as a very superior article of Breckenridge or Coal oil. So it will continue to be in the hands of sharpers until the operators here resolve to control the trade.

Ellis & Stiles are putting up an establishment to manufacture barrels, another thing very much needed. The barrel business bids fair to be a profitable one. The demand for them is great now and constantly increasing, and this firm will no doubt be able to at least partially supply Tidioute when once under way.

## Sketches of Several Oil Wells

Thomas A. Gale, a resident of Riceville, Pa., wrote the first book about petroleum, following Drake's lucky strike. Titled *The Wonder of the Nineteenth Century! Rock Oil in Pennsylvania and Elsewhere* (Erie, Pa., 1860), the volume was extremely accurate. The following reprint is from pages 57-60.

When the news of the quantities of oil which were obtained at Titusville last winter spread abroad, many pronounced it the greatest mystery of the age. Not only so; they hastened to see for themselves, if it could be that natural oil existed in the bowels of the earth, and flowed up spontaneously in prodigious quantities when an orifice was made of more or less depth. The writer shared in this desire to know for himself whether the statement was a fixed fact, and the region of his home a veritable California. He found the half was not told. Or rather, admiration and wonder had not been excited half so high by the hearing of the ear, as they were by the sight of the eye.

When he visited the Barnsdall well, about the first of March—some weeks after the vein was opened—the pump threw up a patent pail full of oil and water, in 4 minutes by the watch. The pail held about 10 quarts. Of these 2 were water, leaving 8 quarts of oil—a gallon for 2 minutes, or 18 barrels in 24 hours. This under two disadvantages; first, the pump at that time had no gas-tube. The consequence was, the gas in it prevented, a portion of the time, the valves from working. The other disadvantage lay in the little depth the pump reached—not half down the well.

Previously, the issue of the vein consisted of less water, relatively; and for days after it was tapped, pure oil rushed up and overflowed the top of the tube, to the amount, as was judged of 10 barrels a day.—The Crossley fountain then being unsealed, and Drake's having become an old story, Barnsdall's was the lion of the valley.

One is almost constrained, from his intuitive notion of the natural world, to suspect such a story is a *whopper*; and that the man who talks in this manner of oil flowing up, has been drinking poor whiskey. But good vouchers are at hand.

The following extract is from a late number of the Titusville Gazette:—"In company with others, we visited the Barnsdall well the other day, and found it better than ever before. The amount of oil produced is truly astonishing. When the pump is stopped, the pure oil will gush up, to the height of 7 or 8 feet above the top of the



pipe. It was not only astonishing, but to a great degree amusing. A ladder was provided for the party to go up and see the oil spout out of the pipe. When we got up on the little platform, it was coming up gently enough. But soon it commenced throwing up the greasy and odorous substance far above our heads, and sprinkling us in a manner which was death to white vests and black pants. We were amused at one gentleman, who did not appear to like that kind of a bath, and undertook to get away by going down the ladder. He started as though he would go down a pair of stairs, but as ill luck would have it, he fell through, between the rounds and barked himself considerably."

The following extract pictures things to life, in relation to another well. "Sloan & Crossley of Titusville, on Monday of last week, struck on the steep bank of the creek at 124 feet depth, a large mine of oil yielding ever since, *fifteen quarts per minute*. A patent pail of oil and water is given off every 6 seconds, and the proportion of oil is three pints. This statement is from well known and reliable citizens who were on the ground and tallied the yield by the watch. The greatest excitement exists in that region, and fortunes are made in a few minutes by sale or lease of lands. A Mr. H—, bought 300 acres for \$30 per acre, and then leased it for \$300 per acre, and  $\frac{1}{4}$  of the oil found. Wells are sinking in every direction and strangers are flocking in from all parts of the country."\*

Three pints in 6 seconds amount to 75 barrels in 24 hours. A splendid thing is the Crossley well! A diamond of the first water! Enough of itself to silence the cry of humbug; to create a sensation among rival interests; to inspire hope in many toiling for the subterranean treasure, and to make every son of Pennsylvania rejoice in the good Providence that has enriched the state, not only with vast mines of iron and coal, but also with *rivers of oil!*

The Crossley well eclipsed its predecessors; the gaping crowds who had been struck with wonder at the others, now flocked the boat, paid their dime and were landed across the creek, to feast their admiration upon this new object.

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\* Jamestown, N. Y., *Journal*, March 23, 1860. [Editor's note.]

## Mode of Raising Rock Oil

Ohio soon became an oil state too. A report by J. S. Newberry gives an especially good survey of how wells were drilled and the costs. This survey was published in an article titled "The Rock Oils of Ohio," *Fourteenth Annual Report of the Ohio State Board of Agriculture* (Columbus, Ohio, 1860), pages 614-617.

The process of raising the oil is very simple, and may be described in a few words. In localities where it exists in quantity, it makes its presence known by floating on streams, or pools of water; by imparting its peculiar taste and smell to the water in wells; by flowing out spontaneously in springs.

When these evidences of oil are present, it is bored for. If the rock is covered with a thick coating of earth or quicksand, cast-iron pipe is driven down to it. If the earth is not more than fifteen to twenty feet thick, a pit is usually sunk. The drilling is done with iron or wooden rods, or both combined; the diameter of the hole being generally three or four inches. If oil is found, and the flow of water is profuse, it is enlarged to five or six inches. Great care should be taken in boring to see that the hole is *round* and *perpendicular*. Neglect of this will render it difficult to set the pump properly. If not filled with water, the condition of the well may be learned by throwing the sun's rays into it from a small mirror.

The oil is pumped up by steam, the pump being of copper or iron; the engine of a power proportioned to the depth of the well and the quantity of water raised with the oil. For most of the wells, a five-horse power engine is amply sufficient. Much care is required in setting the pump, so as to draw from the oil crevice. Barren water veins are stopped off by a "seed bag"—a leather jacket placed around the pump, filled with dry flaxseed, which, expanding when in place, forms a perfectly water-tight packing.

The oil and water, when raised, are thrown into large vats, when the oil, being lighter, separates from the water, and floats on its surface. The surface oil and water of the first vat flow over a weir into the second, and thence perhaps into a third; the water running out of orifices near the bottom of each. From the last vat it is drawn off into iron-bound casks, and is ready for market.

The present price of crude rock oil from Titusville, in New York, is forty cents per gallon—an advance of ten cents within a few days.



The cost of raising the oil will vary in different places, according to the depth of the well, the distance to and hardness of the rock, the price of labor, &c., &c. At Mecca, Grafton, or Liverpool, the cost of a well 100 feet deep, in working order, will be as follows:

Boring 6 inch well, 100 ft. . . . .	\$250 00
Pump and frame . . . . .	160 00
Engine, 4-horse power . . . . .	500 00
Three tanks, 12 by 16 by 4 ft. . . . .	90 00
	<hr/>
	\$1,000 00
Engine and tank power . . . . .	500 00
	<hr/>
	\$1,500 00

This estimate includes all freight, labor, &c. By many it will be thought high, but where all the work is done by paid employees, it is not too much, but probably sufficient.

At Mecca are some paying wells less than 50 feet deep, which began to make returns when but \$200 had been expended on them. In Ohio the case will be an exceptional one where a successful well costs more than \$1,000, before it begins to earn something.

When put in operation, a good well soon pays for itself; the cost of "running" it being small in proportion to the profits. The average daily expense of carrying on a 10 barrel well may be estimated at \$25 to \$30, viz:

Three men . . . . .	\$3 00
Two cords wood . . . . .	3 00
Ten barrels . . . . .	20 00
Incidentals . . . . .	1 00
	<hr/>
	\$27 00
Product, 400 galls. oil, say 25' cents . . . . .	\$100 00
Ten barrels (allowed price) . . . . .	10 00
	<hr/>
	\$110 00
Expenses . . . . .	<hr/>
	27 00
	<hr/>
Daily profit . . . . .	\$83 00

The expenses, yield and profits of a well now in operation near Lowellville, are at present as follows:

Labor, fuel, and incidentals	\$6 00
Loss on 20 barrels	20 00
	<hr/>
	\$26 00
Product, 800 galls. oil, worth at well 30 cents	\$240 00
Expenses	26 00
	<hr/>
Daily profit	\$214 00

Of this, one eighth goes to the owner of the land.

## Explosion, Fire and Loss of Life

Progressive refiners of coal oil soon switched to refining Pennsylvania petroleum to save their businesses after it was demonstrated that the supply of oil was unlimited. At one of these plants, in New Bedford, Massachusetts, it was discovered, less than seventeen months after Drake had "struck oil," that petroleum was indeed a most dangerous product to handle. This is a report of the explosion and fire at the refinery of the Petroleum Oil Company from the New Bedford, Mass., *Evening Standard*, January 3, 1861.

About 5 o'clock yesterday afternoon our city was startled by a loud explosion and very soon after it was announced that the works of the Petroleum Oil Company, on Fish Island, were on fire. These works consist of a vat house, still house, and a long shed, for storing oil. The still house is used for the refining of Petroleum or Pennsylvania oil, and the explosion took place in the west end of this house, probably caused by some one of the workmen lighting a match in that room, thereby igniting the gas. In this room at the time were Mr. Benjamin Jennings, foreman of the establishment and James Downey and David Welch, two of the workmen. Mr. Jennings who was standing directly in front of the boiler, was knocked down and stunned, but succeeded in escaping from the building without further injury. Downey and Welch were buried in the ruins of the establishment. Three other men at work in another part of the works, escaped injury.

Immediately after the explosion the ruins of the still house took fire, which communicated to the vat house and oil sheds. An alarm

of fire was promptly given and the department were quickly on the spot. So rapid was the progress of the flames, that notwithstanding the powerful efforts of the engines, that portion of the works not destroyed by the explosion suffered severely from the devouring element.

The establishment was being run to its fullest capacity, and about 200 barrels of oil was refined each week. Quite a large amount of oil was sold yesterday and removed from the premises. Very little oil was destroyed. About 8,000 gallons of oil, including that used for lubricating purposes were saved.

The remains of the unfortunate men were taken from the ruins about 6 o'clock by Dr. C. L. Swasey, and placed in some boxes and taken to the dead room, in the basement of the City Hall, by the City Marshal. They were literally burned to a crisp, and the only means of identification was by the buttons upon the clothes of one of the men. The top of Welch's head was blown completely off. He was about 35 years of age, lived on Middle street and leaves a wife and three children. Downey was about 28 years of age, leaves a wife and five children, and resides on High street. Both men bore good characters, and were considered very careful men about the works.

The works are carried on by a joint stock company, of which Messrs. Weston and William P. Howland, Esqs. are the principal owners. The former gentleman had left the building but a few minutes previous to the calamity.

It is impossible as yet to ascertain the loss but it will not probably exceed \$5,000, upon which there is no insurance.

The force of the explosion was such as to lift the roof of the still house completely off, and it was felt nearly all over the city, in some instances distinctly shaking the houses. The shock was also felt at Fairhaven. At the toll house on the bridge Mr. Sherman, the keeper, was thrown from his feet, and the plastering was knocked off in several places. In his house about seventy-five squares of glass were broken, and in the house next west, owned by Mr. Sampson Sherman, about one hundred lights were shattered.

We understand that the concussion was so great as to be heard distinctly in Mattapoisett, a distance of six miles.

Coroner Burt was notified of the occurrence this forenoon, and took the preliminary steps toward holding an inquest.

## Fire on Oil Creek!

The first great oil fire in which many men were injured was the explosion and burning of the Rouse Well, also known as the Little & Merrick Well. Henry R. Rouse left his estate to the poor of Warren County, and the Rouse Home at Youngsville, Pa., came into being because of his munificent gift. This story of the fire was in the *Venango Spectator*, Franklin, Pa., April 24, 1861.

### FIRE ON OIL CREEK!

#### AWFUL CATASTROPHE.

#### ELEVEN PERSONS BURNED TO DEATH!

Twenty Dangerously Injured.

Destruction of Property.

*Names of the Dead and Injured—Incidents of  
the Calamity &c.*

On Wednesday evening last an explosion and fire occurred at the well of Little & Merrick, the melancholy results of which have thrown a gloom over our entire community. This well is on the Buchanan farm, on Oil creek, 3 miles from the mouth and about 10 miles from the Borough.—About 5 o'clock the workmen employed at the well struck a very heavy vein of oil which instantly commenced flowing over the conductor at the top of the well. The immense force of the gas threw out the oil in unprecedented quantity; generally estimated at the rate of 100 barrels per hour[.] The report of such an unusually heavy strike drew to the well a number of spectators from the various wells in the vicinity. At about 6 P. M. while the derrick and space around the well, was filled with a crowd of persons looking at the gushing stream of oil, a sheet of fire, sudden as lightning, enveloped the building on all sides, followed instantaneously by an explosion, which sounded to those at a distance like the report of a heavy piece of artillery. Of the entire crowd, numbering some 150 persons, all were more or less stunned or prostrated. The oil immediately saturated the clothing of the unfortunates, and as they returned to consciousness they ran wild with horror, living masses of flame—deprived of the power to save themselves, and beyond the reach of aid from others. Every effort was made by those who were uninjured or slightly hurt, to rescue and assist others.—All the people in the immediate neighborhood were soon on the spot lending their aid, and many lives were saved by heroic exertions. Several were, no doubt

instantly killed. To those who witnessed the fearful scene it is a wonder that any one within the building escaped.

The flow of oil was not checked by the explosion, but continued in a stream of about four inches in diameter, spreading over the ground and being ignited as it fell—adding a dense smoke and sheets of flame to the horrors of the scene. At the top of the jet of oil a steady intense white flame rose to the height of 30 or 40 feet with shoots of fire above that, to the height of 100 feet. About one hundred barrels, which had just been filled, were soon burst by the heat and added their contents to increase the fire. The oil in the vats also burst out and with that from the barrels, and the immense quantity gushing from the well, ran in ditches or covered the surface to a considerable extent. All was one mass of flame and within this fiery circle were some thirty human beings, frantic with misery and terror, or lying in death, a prey to the devouring flames.

Among the first rescued was Mr. H. R. Rouse, one of the owners of the territory. He was burned almost to a crisp. But a moment before, he had been conversing with Mr. Benedict and Mr. Page, a driller at the well.—He lingered until Thursday morning, when death put an end to his sufferings.

The physicians of Franklin and the vicinity of the catastrophe, were at the scene as soon as possible, rendering every aid in their power. To them and to others we are indebted for a list of the injured and the dead. The subjoined we think is an accurate list of the sufferers.

#### DEAD.

Augustus Cummings, 18, Butler county, Pa.

Judson Mason, 22, North East, Erie county, Pa.

H. R. Rouse, Enterprise, Warren county, Pa. Died 3½ o'clock, 18th West Skinner, 20, Wattsburg, Erie county, Pa.

Jas. Walker, 16, Butler co., Pa.—Died in ½ an hour.

Geo. Hays, 23, Sherman, N. Y.—Large gold watch melted by his side. Taken out dead.

Albert Gardner, 18, Michigan.—Taken out dead.

Geo. W. Bentley, 25, Lawrence co., Pa. Died Thursday noon.

Philander Stevens, 18, Cattaragus county, N. Y.

Two unknown.



## BURNED.

S. Houston Walker, Pittsburgh; sever[e]ly.

John Glass, Butler county; severely.

Geo. Glass, Butler county; slightly.

John Reisling, Sherman, N. Y[.]; severely.

Archibald Montgomery, Irwin tp; severely.

James Johnston, Mercer county; severely.

Willis Benedict, Warren county; severely.

Constance Bunnell, Erie county; severely.

Oscar Wadsworth, Erie county; slightly.

James H. Perry, Utica, N. Y.; dangerously.

Joseph Lloyd, Utica, N. Y.; dangerously.

J. Milton Buell, Utica, N. Y., severely.

Henry Case, Chatauque co., N. Y., severely.

James Smith, Sandycreek township; severely.

Lewis Vananden, Wattsburg, Erie county; supposed to have been burnt to death. Was in the flames, but made his escape with loss of hair and whiskers; slightly injured.

A. J. Holeman, Dixfield, Maine; severely.

Smith Cushing, Sherman, N. Y.; severely.

H. Eastman, Whitesboro, N. Y.; dangerously.

Thomas P. Page, Mercer county; severely.

J. G. Stratton, Crawford county; severely.

Levi Walker, Butler co.; severely.

One unknown, taken away by his friends.

Two or three, very slightly burned.

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The loss of property cannot be less than \$20,000. Two thousand barrels of oil were consumed or lost; three engines destroyed, Buchanan barn burned with grain and oil stored therein, valued at \$1,400. The fixtures of several acres were consumed.

It is estimated that the burning well for some forty hours was flowing at the rate of three barrels per minute. This large quantity of oil spreading over the surface of the ground in all directions—blazing as it fell, and feeding the flames, will account for the terrible nature of the conflagration.

There are two opinions as to the origin of the fire. One is, that it was caused by the light of a segar, which a spectator was smoking.



The other and more probable theory is that the gas was ignited by the furnace of the engine at Wadsworth's well, some 5 rods distant. Several who were present, say a streak of flame, like an electric flash, was seen to dart horizontally from the Wadsworth to the burnt well, at the instant of the explosion. The atmosphere was impregnated with gas at the time and no doubt communicated with the fire at the Wadsworth well.

All sorts of rumors were afloat during the fire and it was difficult to obtain reliable information. It is supposed by some that persons are lost who are unknown to any in the neighborhood—strangers just arrived—and that the list of dead will thus be increased. It is possible that the supposition may be a fact. A thorough examination for remains will decide.

There were many acts of heroic devotion to save life—many heart-rending episodes in this sudden and awful visitation, that will not be forgotten.

Mr. Rouse, late a member of our Legislature was one of the first who died after being rescued. Mr. Rouse was a genial, noble hearted man—loved by all who knew him. He was taken out of the fire by two boys, to each of whom he gave one hundred dollars. His will is a monument of liberality and benevolence, which will be noticed hereafter.

If the accident had occurred one hour, or half an hour later, the loss of life would have been fearfully increased. The people were just beginning to arrive at the well. Those who came in a short time after, escaped destruction, and were the means of saving the lives of others who were helpless.

The difficulty of approach to the burning well—the dense smoke and suffocating gas, with the intense heat and danger can only be appreciated by those who were present. As the cloud of smoke would lift for a moment, the gallant men who were trying to save their unfortunate fellows, would get sight of some victim and rush to bring him out.

Mr. Gardner, a young man from Michigan, was brought out at the second attempt by James M'Donald, of Oil City. This poor victim's leg was almost entirely burned off at the knee joint and gave way when it was seized by Mr. M'D. The second effort was successful and the body was brought out of the fire. Both arms were burned to stumps and the whole body a crisp. Mr. M'D again went to where

the body had been lying and found Mr. Gardner's watch, by which the body was identified.

The appearance of the sufferers is more or less horrible. The dead are bloated to almost double their size in life, which is also the case with those who are severely burned.

Several thousand persons have visited the well since the accident.

The Physicians in attendance have been unremitting in their exertions to relieve the sufferers and everything possible has been done to make their condition comfortable. Praise is due to Dr. Haldeman, of Stark co., Ohio; his efforts have been untiring. Also to Dr. S. S. Christy, of Oilville; Dr. Hostetter, of Ohio; Dr. Murray, of Allegheny; Dr. Williams, of Wattsburg; Dr. Elliott, Dr. S. G. Snowden and Dr. Evans of Franklin. There may have been other physicians in attendance whose names we have not learned.

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#### LATER.

On Saturday the fire had entirely subsided. The well was still flowing and the workmen were securing the oil in barrels at the rate of 20 barrels an hour. Assuming the well to have flowed at no greater rate than this during the 70 hours it was burning, there is a loss from it alone of 1,400 barrels; but twice that quantity is nearer the truth.



Wells in Oil Creek Valley owned by W. C. Chapin, 1864. Chapin, at far right, identified the seated man nearest the camera as John D. Rockefeller. The photographs on these pages were taken by the well-known photographer of the oil country, John A. Mather (1829-1915), of Titusville. The collection of Mather photographs is preserved by the Pennsylvania Historical and Museum Commission at the Drake Well Museum, Titusville.



Lowrie, Fawcett & Co. refinery at Pioneer, Pennsylvania, 1866.





Coffee break? Four "speculators" rest along Dennis Run near Tidioute, 1865.



East side, Triumph Hill, 1871. Derricks were seldom thicker than here.

## Meeting to Regulate the Price of Rock Oil

Panic swept the nation with the commencement of the Civil War in 1861, and the oil country was hard hit. In September large flowing wells were struck with several yielding more than 3,000 barrels a day. Crude oil was allowed to run down Oil Creek as it could not be handled.

Small wells were abandoned and operators were dismayed; the price of crude fell to ten cents a barrel, the lowest price on record before or since. In an attempt to bolster the market and limit production, producers met at Rouseville, Pa., formed the Oil Creek Association, and accomplished practically nothing! This was oildom's first attempt at price control. The first report of the meeting is from the *Daily Post*, Pittsburgh, November 14, 1861, the second from the *Daily Post*, November 28, 1861.

### MEETING TO REGULATE THE PRICE OF ROCK OIL

[November 14]

At a meeting of oil dealers, at Rouseville, on the Buchanan farm, last week, for the purpose of regulating the supply and price of oil the following committee was appointed to consider the proper course to be pursued by operators: J. L. Mitchell, Dr. Murray, Hiram Pool, Hon. James Wadsworth, Dr. Hostetter, O. Noble, William S. Adams, S. Martin, Ham. McClintock, Washington McClintock, A. B. Funk, W. F. Clark, Mr. Crane, Dr. L. Haldeman, and L. S. Watkins, they to retire and appoint a subcommittee of six, to carry out their suggestions. The executive committee of six, as appointed by the standing committee, consisted of James Wadsworth, Dr. L. Haldeman, Dr. Hostetter, Dr. Murray, O. Noble, and J. L. Mitchell, it being a part of their duty to frame articles of association for the permanent regulation of the supply and price of oil. It was further moved by Mr. Wadsworth that a committee of five be appointed by the Chair, with instructions to consult with the Directors of the Pennsylvania Central Railroad upon the pract[ic]ability of building a branch from the Philadelphia and Erie Railroad to Oil Creek Valley. Said committee were also instructed to entertain the project of constructing a plank or timber road from the oil region to such railroad station as they might deem most advisable.

### THE OIL TRADE.

[November 28]

At an adjourned meeting of the "Oil Creek Association," held last week at Rouseville, a plan of organization was adopted, to include all

operators on Oil Creek from Titusville to the mouth, and from Tediutè on the Allegheny, to five miles below Franklin; the organization to elect officers annually and continue for ten years: an inspector to regulate the production of the flowing wells; sales to be made at *not less than ten cents a gallon at the wells* and the proceeds paid in to a general treasury, where it is to be held subject to order of the seller, subject to a percentage assessed. This plan is to be considered at the next regular meeting. In the meantime, active efforts are being made for the construction of a plank or timber road to connect with some feasible point on the Philadelphia and Erie Railroad. Some facts have also been laid before the Association in regard to the prospect of a railroad from the mouth of Oil Creek to the Philadelphia and Erie Railroad. A survey of a portion of the route has already been made, and steps have been taken for securing a charter.

## The Petroleum Region—the Rock Oil Business—the Extent and Sources of Supply

This résumé was written less than three years after Drake's well opened the way for the modern petroleum industry. It is an excellent summary of what had happened from August, 1859, to February, 1862. Prepared by an unknown correspondent, it appeared in the *Scientific American*, February 22, 1862 (Vol. VI, No. 8).

If El Dorado was a myth of the olden time *Oil* Dorado is a shining reality of the present. Under the names of Seneca and Indian oil petroleum [*sic*] had long been known and used in various sections of our country as a medicinal liquid. It was obtained in very small quantities from natural springs, and attracted very little attention until about three years ago, when it began to acquire distinction as an illuminating agent. When oil, obtained from the distillation of coal, had come into very general use, and had superseded fish oil as a burning fluid, its peculiar odor led to the suggestion that the natural oil obtained from some wells in Western Pennsylvania was a similar product, and it was believed that if it could only be obtained in large quantities it would prove to be the cheapest burning fluid for giving light in the world. These anticipations have been realized in a wonderful manner—the boring of a well at Titusville, on Oil Creek, in 1859, solved the question. At quite a moderate depth petroleum was found in great



quantities, and this being noised abroad it caused much excitement, and soon led to the boring of other wells in the vicinity, with like results. An "oil fever" affected the community; many sections of the original farms in the region were purchased at high prices by speculators, and the creek bottom was staked out like California claims into patches of a few rods square, for the purpose of boring for oil, and, within the short space of three years, this quiet and sparsely-settled region has become studded with new villages, and supplied with a large population. Although Oil Creek valley seems to be the center of the oil business, petroleum is found throughout a wide extent of country on both banks of the Alleghany, and on many of the creeks which are feeders of this river. Numerous oil wells have been sunk in Tidioute Creek valley and other places, but we intend to describe more particularly the valley of Oil Creek, for although much has been penned and published respecting it, neither printers nor preachers have exhausted its peculiarities.

The petroleum oil trade has become gigantic in its proportions. An idea of it may be obtained from the late annual report of the Philadelphia and Erie Railroad, in which it is stated that in 1859 it carried only 325 barrels; in 1860, 21,794, and last year no less than 134,927 barrels. This railroad carries the oil to Erie, Pennsylvania, from whence it is transmitted to the East by the New York and Erie Railroad. The Atlantic and Great Western Railroad also carries large quantities of the oil, and in summer flat boats come up the creek and take down heavy cargoes to the Alleghany river, thence to Pittsburgh. The product of this pretroleum [*sic*] region is estimated at 75,000 barrels per month. On one day, two weeks ago, there were no less than 120,000 barrels on the surface of the ground on Oil Creek, as we have been assured by one who was on the spot at the time for the very purpose of obtaining accurate information. The yield of these oil wells is so bountiful that the crude petroleum can now be purchased at them for a few cents per barrel. It is so abundant and cheap that the pumping wells are suspended for the present, as it will not pay to incur the expense of using a steam engine for drawing up the oily fluid, hence only the "flowing wells"—those which throw up their petroleum—are in operation. The greatest expense in winter connected with the transit of the petroleum is the hauling of it to the railroad station by teams. The region is very rough and hilly, and the roads bad, hence the expense of teaming is necessarily high for drawing it from twenty to thirty miles to the nearest rail-

road stations. No less than 3,000 teams are now employed in the Oil Creek region, and yet they are incapable of taking it away as fast as the wells deliver it, therefore vast quantities are suffered to flow into the creek. Never before have men been supplied with such a cheap fluid for producing artificial light, as the refined article in large quantities of several barrels is but 37½ cents per gallon in New York, and only 40 cents per single barrel.

This oil district is peculiar in many respects. The far-famed Oil Creek, ordinarily, is a stream of about 100 feet wide and 3 feet deep. It flows for seventeen miles in a southerly direction from Titusville to Oil City, when it falls into the Alleghany river. It resembles a huge eel, wriggling through a narrow valley, about half a mile wide, with hills rising from 70 to 100 feet high on each side, forming banks. The oil wells are bored in the level meadows or bottoms forming the dry links on each side of the creek, and they extend through the whole valley. The pumping wells have been bored to a moderate depth; the flowing wells are bored from 350 to over 500 feet in depth. Oil City, McClintockville, Rouseville and Titusville are important oil villages, situated in the valley. The flowing wells vary in their productions from fifty up to five hundred barrels per day. As stated in the *Titusville Gazette*, of the 20th ult., the latter quantity is now flowing from a well recently opened, the amount in gallons being no less than 20,000 per diem. There is no evidence of the supply becoming exhausted, as the oldest flowing wells, yield as abundantly to-day as when first opened, and, excepting in a single instance, the flow of none has been affected by new wells, sunk within a short distance. A classical taste seems to pervade the neighborhood. This has been exhibited in the names given to the wells, such as the Buckeye, the Funk, the Eupion well, &c. The boring of these wells is mostly executed with steam power, but the oil is not reached at a uniform depth, although it is generally obtained in the same sandstone strata. It seems to be contained in rocky channels and chambers.

As the drilling of a well proceeds downward the bore is tubed, and when the oil is "struck" a gooseneck pipe is secured to the top joint, and delivers the oil into a tank. A great quantity of gas, under a high pressure, is contained in the subterranean oil chambers, as the oil when first tapped in a flowing well spouts up in a greenish-colored column from two to four inches thick, according to the bore, and to a hight [*sic*] of 100 feet above the surface. The sight is deeply

interesting, and it attracts crowds of visitors from all neighboring parts. The liberated gas suddenly expands and saturates the whole atmosphere for a great distance around. Every fire in the vicinity has to be extinguished, and not a cigar allowed to be puffed, under the penalty of an explosion. The petroleum, although coming up from such a depth, is piercing cold, and in this respect it differs from the waters of most artesian wells, which are generally quite warm.

The virtues of petroleum are not confined to giving light. Besides being used for lubricating machinery, and some other purposes, the people in the oil regions value it highly as a panacea for almost all the ills with which human flesh is afflicted. It is applied with gentle rubbing to parts of the body affected with rhumatic [*sic*] pains, and it is said to make them fly as darkness disappears before its light. For coughs and lung diseases it is held to be equally efficacious. An acquaintance of ours, while on a visit recently to the oily regions, was treated to an interesting medicinal scene. A workman at one of the wells having been afflicted with a pain in his chest, lifted half a tumbler full of the crude stingo, said, "Now you see it and (down his throat it went) now you don't see it." It appeared to be a penetrating dose. "There is no accounting for tastes." What signifies the difference between Eupion oil and Epsom salts.

It will readily be appreciated how the *coal-oil* business has been extinguished by the petroleum oil wells, as about fifty gallons of crude oil was obtained from a tun [*sic*] of good cannel coal, costing from two dollars per tun at the mines to twelve and sixteen dollars in New York and other Eastern cities, whereas one well now delivers daily 20,000 gallons, equal to the product of 400 tuns of coal, and all this without the expense for coal or first distillation. The many coal works which were fitted up at great expense in various places, have been converted into petroleum refineries—the only way to save them from extinction. No coal oil manufactories can stand in competition with American petroleum wells, hence an encouraging export trade of the article to Europe has commenced, and if carefully conducted it may result in much benefit to our people. To secure such objects, greater railroad facilities for carrying the oil are required; and we are pleased to learn that branch lines are contemplated to tap the oil valleys, and thus obviate the great expense now entailed in drawing it by horses to the distant [*sic*] stations. The carrying capacity of the Philadelphia and the Erie Railroad is only 1,000 barrels per day at present.

## Petroleum in London

An early worry about crude oil was the danger it engendered during transportation and storage periods. Export shipments caused such problems as evidenced by this report from the *Scientific American*, April 26, 1862 (Vol. VI, No. 17).

The Insurance Companies in London, like those in New York, have become alarmed at the large quantity of well oil at present stored in the British metropolis. These companies have laid their grievances before the Mayor, and they assert that this oil is of a most inflammable and dangerous character, being liable to spontaneous combustion. It is said that there are about half a million of gallons of such oils now stored on the wharves in London. As crude petroleum is more dangerous than the refined quantities, and as the cost for carriage to market is just the same for both, it would be well to refine all petroleum in the vicinity of the oil wells.

## Oil City and Pond Freshets

The "pond freshet" was a means of transportation adopted by the oil producers from the lumber trade. It was fast, cheap, but full of hazards. It lasted only until pipelines entered the oil country. A reporter provided this graphic description of such a freshet in the *Venango Spectator*, Franklin, Pa., May 21, 1862.

In company with a nice party we paid a visit to Oil City on Saturday last to witness the last pond freshet of the season. To those who have never witnessed the operation of running oil on an artificial freshet, a brief description will be necessary:

The water during the week is collected in some twelve or fifteen dams, which are discharged of their contents when the boats are ready to run, and down they come, helter skelter, all conceivable sorts of craft, with oil in bulk, oil in barrels—oil in all shapes. The crowd on the bridge at the mouth of the creek, and the crowd on shore was immense. The "gallient saileurs" on the boats were the busiest beings we ever saw. Down comes the fleet, in good order, until one unfortunate strikes the pier of the bridge and swings athwart the current. That fellow loses his oil, which is in bulk, and blocks up the channel. The rear boats see the danger of collision, but on they come—bump—crash—against the unlucky boat, which is soon reduced to chips.

From a cursory view of the spectators, and a *cussory* exhibition on the part of the boatmen, we came to the conclusion that almost



every man on the bridge and on shore knew exactly how to run a boat. There was no lack of directions and orders by the shore fellows, and no scarcity of brimstone expletives from the men on the boats. Of the hundred crafts which started in the race, about ninety came through safely. The others were more or less damaged.

The oil spilled in the operation of running out of the creek floats into the eddies below the mouth, where it is gathered by the men who devote themselves to that especial business.

OIL CITY is really a business place. It has grown up with the oil trade and is an index to the business on the Creek. On the east side of the creek several handsome cottages are in progress. The town proper is very irregular in its plan, and everything that addresses itself to the eye or nose is full of grease. The plank pavements are saturated with oil. The sides of the houses are oily—the hitching posts are greasy—the men who congregate upon the boxes in front of the shops and saloons are oily, and leave their imprint where they sit. If any man wants to see what he can see nowhere else in this world, we recommend a trip to Oil City during a Pond Freshet.

## The Refining Process

No refinery was better known and deemed more up-to-date than the one constructed at Corry, Pa., by Samuel Downer of Boston. Our best description of it comes from an unknown correspondent who visited the oil country and wrote a lengthy article, "Petroleum and Its Marvels," in the Springfield, Mass., *Daily Republican*, October 12, 1864. That part of the article pertaining to the Downer Refinery is reproduced here.

All the oil as it comes from wells is impure, and is known as crude oil. This must be refined before it is suitable for use. These refineries are very numerous in a small way, consisting of merely a stone hut connected with an adjacent board shanty by a trough, the whole surrounded by a few oil barrels. As the said shanty invariably has "no admittance" over the door, I will not attempt to describe the internal arrangement, but, instead thereof, will attempt a brief description of the extensive refinery at Corry, as explained to us by the gentlemanly superintendent, Mr[.] Smith. This establishment is known as the Downer refinery, and is owned by parties in Boston who manufactured oil from coal previous to the discovery of the oil wells, and is probably the most perfect refinery ever constructed. The crude oil,

as it is received, from the wells, is stored in immense vats under ground, from which it is taken by rotary steam pumps and conveyed in pipes to different parts of the works. The first operation is distilling, in which the oil is placed in receivers over a coal fire, and the vapor carried off to a worm, where it is condensed and then drawn off. That which first comes off is the light oil, and is called naphtha. There is no dividing line between naphtha and oil, but when the operator thinks it is heavy enough he shuts off the naphtha and calls it oil. The oil thus obtained by distilling is further purified by a course of treatment that also to some extent deodorizes it. The oil is conveyed from one operation to another by pumps, the conveying pipes being provided with suitable valves by means of which one set of pumps are enabled to take oil from any part of the works and convey it to any other part to which it is necessary that it should be carried, thus avoiding, to a great degree, the danger from fire. Lastly it is carried to iron tanks in the barreling room, where it is barreled and shipped. The only substances resulting from the distilling are the naphtha and oil that pass off in a vapor, and a small amount of coke left in the retort or still.

Another part of this establishment is devoted to the manufacture of lubricating oils for machinery. For this purpose the crude oil is first subjected to a suitable treatment to refine it, and then placed in a room which is a mammoth refrigerator, and in which the temperature is reduced to a very low degree by salt and ice. This converts the oil into a thick slush, in which condition it is placed in strong canvas bags and subjected to a powerful pressure, by which the oil is forced through the canvas, leaving a solid substance in the bag. This substance is paraffine, and, when broken, separates into thin flakes of a light brown color. The crude paraffine is sent to Boston, where it is refined to the pure white article of commerce.

This whole establishment is constructed of brick and iron, and in every way rendered as nearly fire-proof as possible. Two large steam boilers supply steam to the pumps, and two-inch steam pipes connect these boilers with every part of the works where there [i]s a liability to fire. There are six furnaces or stills, each in a separate fire-proof room. At one time the bottom of the retorts gave out when it was nearly full of oil, filling the furnace room with burning oil to the depth of several inches. The room was immediately closed, and live steam let in from the boilers through a full two-inch pipe, and it was five hours before the flames were subdued. Steam is the only thing



of any avail, as the more water is thrown on the more the flames seem to rage.

The great difference in the quality of the oil in the market is due to the difference in the skill of the manufacturers, and the time at which it is drawn from the still, as the last that comes over is darker than the first. But in large manufactories this last difference does not appear in the oil as it is shipped, as the oil from the several stills is all mixed in one tank, and thus the average is about the same.

## The Petroleum Region of America

The nation-wide interest in petroleum and what was going on in northwestern Pennsylvania led journalists and newspapermen to visit the oil country. Many of them reported what they saw in a wide variety of words and attitudes. John S. Schooley's account appeared in *Harper's New Monthly Magazine*, April, 1865 (Volume XXX, Number CLXXIX).

When the treasures of California were discovered thousands rushed to its golden shores. The wilderness of the great West teemed with life, and the gulches were compelled to give up their treasures, long hidden from the eye of man. The American mines were no sooner opened than Australia was overrun with eager adventurers seeking for gold. Gold having been found in other parts of the world, skeptics on the subject have ceased to exist, and the golden mines of the eastern and western hemispheres have become realities.

But there is a mineral substance more precious than silver or gold, the occurrence and profitable discovery of which geology alone is able to determine. That substance is coal. Yet when coal was discovered many predicted the almost immediate failure of the supply; but as civilization overspread the land, removing our forests of heavy timber, thus decreasing the supply of the only fuel we then had, Nature came to our assistance and disclosed to us the vast coal-fields hidden for so many ages beneath the earth. The coal "bubble" has never "burst." New fields are being discovered.

Seemingly not satisfied with the present developments of mineral wealth bestowed on us, Nature, keeping pace with the necessities of man, suddenly unfolds another wonder—*Oil, Petroleum*—which now comes spouting from the bowels of the earth, from inexhaustible basins hidden deep down amidst the sandstone rocks below.

Although Nature has selected the nineteenth century in which to develop her great resources in the article of petroleum, yet history in-

forms us that the existence of "rock-oil" was known through many past ages. The walls of Babylon were built with brick, cemented with hot bitumen or asphaltum, which was found in Judea, afterward discovered in France, and in the sand rock of Albania. This asphaltum is black in color, brittle and solid, and when heated is reduced to a liquid state. It finds its way to the surface in the shape of a thick, waxy fluid, which was used for lubricating purposes, and for the calking of vessels. In the Birmese empire there is a mountain where over five hundred pits have been sunk for the collection of petroleum, which has long been used for burning purposes. It is also found on the shores of the Caspian, where it oozes through a soft soil in the form of vapor or gas, and is led through earthen pipes, and employed for illuminating the neighboring towns and cities. A very light liquid oil, resembling naphtha, is found coming from a spring near the village of Amiano, in the State of Parma, which supplies a sufficient quantity to illuminate the city of Genoa, for which purpose it is employed.

It is evident that the supply of whale-oil is fast decreasing, and that those mighty creatures of the deep have become so few that our once immense whale-fisheries threaten soon to be among the things that were. During the past ten or twenty years the demand for a burning oil has increased so rapidly that lard-oil and burning-fluid were introduced. But these, together with the sperm-oil, not only failed to supply the increased demand, but have gradually become almost extinct. It was at this point that there was disclosed to us, at our thresholds, a never-failing supply of burning oil.

The most celebrated oil-wells as yet discovered and operated on the American continent are located in the western part of Pennsylvania, principally in Venango, Crawford, and Warren counties. The wells next of note are found in Western Virginia and Eastern Ohio; and recently wells have been opened in the States of New York and Michigan, also in Canada.

It has been said that petroleum is only found within a belt running diagonally across the globe, varying from six to sixty miles in width—sweeping across through the centre of the State of New York, passing over the western part of Pennsylvania and Virginia, and the eastern portion of Ohio and Kentucky, and so on down through the wilds of Tennessee. That there is such a belt of oil lands in existence, from the present developments, is not doubted; but the assertion that no oil is found without the belt can not be sustained by facts, because

the Canadian wells now flowing hundreds of barrels of oil are located on the borders of Lake Erie, far to the west of the so-called oil belt.

Oil Creek, which has become celebrated as the site of the richest oil-producing region on earth at the present day, is a tortuous mountain stream, taking its rise in the northern part of the State of Pennsylvania, near the south line of Erie County, and, with its tributaries, waters Crawford and Warren counties, and after a course of about thirty miles through these counties empties into the Alleghany River seven miles above the town of Franklin. The valley through which Oil Creek takes its course is narrow, and flanked on each side by high and rugged hills, on the top of which are broad fields of excellent farming land. The scenery on Oil Creek at one time, no doubt, was quite picturesque; but now the bottom lands are dotted with tall derricks, wooden engine-houses, and iron smoke-stacks, out of which columns of black smoke roll upward to the clouds. The pines and hemlock are cleared from the mountain sides, and all is busy life.

Previous to the developments of the petroleum discoveries this entire region supplied the valleys of the Ohio and Mississippi with vast quantities of lumber. Thousands of long rafts found their way out into the Ohio and Mississippi rivers during the spring and fall freshets. The extensive lumber saw-mills of Messrs. Brewer, Watson, and Co. were located on Oil Creek, near Titusville, the present metropolis of Petrolia. Near those mills oil first made its appearance in large quantities in this country. Half a mile below Titusville Oil Creek meets its principal confluent, Pine Creek, more commonly known now as the East Branch of Oil Creek; and the delta of these two streams is covered with old oil-pits, which occur at intervals all along the creek below Titusville. These pits are supposed by some to have been the work of the French during their occupancy of the country in 1759, on account of being located almost directly between the French forts of La Boeuf and Venango. The writer is inclined to believe that these pits were constructed by the Indians long before the appearance of the white man in this region; which belief is sustained by the following circumstance: In sinking a well recently in the neighborhood of Titusville, five feet beneath the spot where a tree had stood, which, calculating the layers of its yearly growth, must have been at least two hundred and forty years old, was found a wooden well curb, or mouth, of an old oil-pit in a good state of preservation.

The land of this entire region belonged to the "Holland Company," who obtained it in lieu of moneys lent to Congress during the Revolution: It was divided into four-hundred-acre lots, and sold at a very low price; but so many more attractions were held out to emigrants by the Western States at that time that this Venango region was almost overlooked, and it became settled very slowly. In the year 1797 Jonathan Titus and Samuel Kier arrived from the east and entered lands in this region. Mr. Titus secured a large tract of many hundred acres, part of which is now the site of Titusville and part the lands belonging to the "Titus Estate Petroleum Company" of New York. The Hon. John Reynolds, now of Meadville, with his father, shortly afterward settled at Cherry Tree, seven miles below; and not long afterward Hamilton and James M'Clintock settled on Oil Creek—the former at what is now Petroleum Centre, and the latter on the present site of M'Clintockville.

Petroleum, under the name of "Seneca oil"—so called from the tribe of Indians of that name who once inhabited the country—became early of great importance to the settlers, both as a medicine and for burning and lubricating purposes. The greater portion of oil was obtained from two natural springs. One of these was in the immediate neighborhood of Titusville, on the lands now owned by the "Watson Petroleum Company" of New York, on the spot where now stands the old "Drake Well." The other spring was on the farm of Hamilton M'Clintock, within four miles of the mouth of Oil Creek.

The old salt-wells situated on the Alleghany River, near the town of Tarentum, were owned by the father of Samuel M. Kier, now of the city of Pittsburg. About two years after the opening of these salt-wells oil made its appearance upon the water that flowed into the salt-kettles, and interfered with the quality of the salt to such an extent that Mr. Kier at one time thought of abandoning his wells; but he afterward constructed a canal leading into the river, into which he passed the oil from the water. The oil on the water in the canal and river became very offensive to the people in the neighborhood, and many complaints were made. One day some boys, who were playing near the canal with matches, accidentally set the oil on fire, and it was with the greatest difficulty the village was saved from burning.

During the year 1853 Dr. F. B. Brewer, of the firm of Brewer, Watson, and Co., conceived the idea of collecting surface oil by means of absorbing it in blankets, and wringing the oil out. Great quantities were collected in this novel manner, and used for burning purposes



in the lumber mills of the Oil Creek region. The oil produced from the oil springs became so necessary and useful as to suggest the formation of an oil company in 1854 called the "Pennsylvania Rock-Oil Company." This was the first Oil Company ever formed. This was prior to the sinking of any well, or before such a thing was suggested.

The Pennsylvania Rock-Oil Company purchased 100 acres of land on Oil Creek, below Titusville, for the purpose of collecting the surface oil. This project was, however, soon after abandoned, and the original Petroleum Company ceased to exist.

Although Professor Silliman, of New Haven, had in 1854 analyzed the rock-oil, and pronounced upon its properties, no further developments of any importance took place until the winter of 1857, when Colonel E. L. Drake, of Connecticut, arrived at Titusville, and was the first man who attempted to bore for oil. In December, 1857, he visited Titusville, examined the oil springs, and gave the subject of surface oil a thorough investigation. He soon concluded that rock-oil could be obtained by sinking a well; and acting upon this, he in company with James M. Townsend and E. B. Bowditch, leased the lands of the Pennsylvania Rock-Oil Company for the term of twenty-five years for the purpose of boring for oil. The operations were to commence the following spring. Soon after closing this lease, Colonel Drake and friends from Connecticut formed a company called the "Seneca Oil Company" for the purpose of working the lands and sinking wells under the management and control of Colonel Drake. Early in the spring he removed his family to Titusville, then containing not over one hundred and fifty inhabitants. He first informed himself thoroughly on the subject of boring, and visited the salt-wells on the Alleghany River for that purpose, where, after some difficulty, he employed a man who agreed to sink wells for the Seneca Company; but he and others to whom he had applied failed to keep their engagements, and it was not until the following spring that he could obtain a suitable person to commence the well. The first difficulty encountered was the surface water, which would flow into the well and undermine the earth, and cause it to cave in. In sinking the well it was supposed necessary to dig to the first rock; but in consequence of the earth caving in on the workmen so frequently, Colonel Drake invented the iron driving-pipe and mode of driving which is now in universal use, not only in the oil regions, but among the salt borers. He was obliged to go fifty miles to a machine-shop every time his



tools needed repairing; but after many delays and accidents, on the 29th day of August, 1859, at the depth of 69 feet 6 inches, he struck a vein of oil, from which he afterward pumped at the rate of thirty-five to forty barrels per day. This is now known as the Drake Well, and was the first well ever sunk for oil, and the first petroleum ever obtained by boring.

Now commenced a scene of excitement beyond description. The Drake Well was immediately thronged with visitors arriving from the surrounding country, and within two or three weeks thousands began to pour in from the neighboring States. Every body was eager to purchase or lease oil lands at any price demanded. Almost in a night a wilderness of derricks sprang up and covered the entire bottom lands of Oil Creek. Merchants abandoned their storehouses, farmers dropped their plows, lawyers deserted their offices, and preachers their pulpits. The entire western part of the State went wild with excitement.

Very soon after the success of Colonel Drake, Messrs. Brewer, Watson, and Co. leased the farm of Hamilton M'Clintock, and commenced a well on it, which was successful at the depth of 70 feet. Then followed the sinking of many wells on the different farms on Oil Creek. The Barnsdell [Barnsdall] Mead and Rouse Well was opened in the spring of 1860. Then the Cros[s]ley Well in April of same year. During this summer many wells were opened in the vicinity of Tideoute on the Alleghany River. In June, 1861, A. B. Funk sunk a well 470 feet deep on the M'Ilhenny farm, which was the first large flowing well. Then followed the Brewer, Watson, and Co. Well on the G. W. M'Clintock farm, the Phillips Well on the Tarr farm, the Willard Well on the H. M'Clintock farm, and the Rouse, Mitchell, and Brown Well on the Buchanan farm. This latter well flowed a stream of oil without pumping equal to one thousand barrels per day. Thousands of barrels of oil flowed into the creek before suitable tanks could be prepared to receive it.

In the midst of the excitement, from some cause unknown, the gas and oil from this well took fire, and, as described by an eye-witness, columns of black smoke rolled upward into the air, the blazing oil leaped heavenward, and, falling over on all sides from the fiery jet, formed a magnificent fountain of liquid fire. The sight was awfully grand, but, sad to relate, nineteen human beings were burned to death. Among them was Mr. Rouse, one of the proprietors of the well. Mr. Rouse lived for several days after being injured, and in

framing his will, after making certain bequests, left to the County of Warren a handsome sum, to be applied one half for road purposes and one half to the poor of the county. This bequest is now valued at \$150,000.

The next large flowing well opened was the Empire, in the vicinity of the Funk Well, that flowed 3000 barrels per day. The Sherman Well was opened in April, 1862, then the Noble and Delemater Well in May, 1863. This celebrated well was commenced in 1860, and was bored to the depth of 167 feet and abandoned. Mr. Noble went further down the creek and became interested in other wells on the Tarr farm, but in the spring of 1863 he recommenced the work on his old well, and went down to the depth of 471 feet without having any indications of oil. At that depth he concluded to tube and pump, abandoning the idea of obtaining a flowing well, but to the great astonishment of himself and every one else, after pumping a very short time, suddenly the great Noble Well commenced to flow. Long before the opening of this well petroleum had become so plenty that most of the pumping wells were abandoned. Every person wanted a flowing well.

Samuel M. Kier, of Pittsburg, was the first man who refined the crude oil, and to him we are indebted for this discovery. W. H. Abbott, of Titusville, erected the first large refinery at that place, which was before the days of railroads in that region. The heavy iron castings and machinery were brought in wagons from Union Mills and Franklin, through mud axle-deep. Parties interested with him became disheartened, and would have abandoned the enterprise had it not been for the energy of Mr. Abbott, who finally succeeded in completing his building.

Brewer, Watson, and Co. were really the great pioneers in the introduction of petroleum in large quantities. This enterprising firm expended the sum of \$750,000 in cash for barrels alone before they realized one cent of profit. All they required was the actual cost of the barrel. They have lived to reap a rich harvest from their arduous efforts in the introduction of petroleum, and have been handsomely repaid for the hardships and trials through which they have passed. During the summer of 1861, Samuel Downer, of Boston, established a branch of his works and commenced the refining of oil at Correy [*sic*], and gave his entire attention to the business, and during that year his refinery absorbed nearly all of the oil product. George M. Mowbray, agent for Scheiffelin [Schieffelin] and Co., of New York, made the first

extensive purchase of petroleum for shipment. Messrs. Drake, Watson, Brewer, Kier, Abbott, Mowbray, Downer, the firm of Brewer, Watson, and Co., and others, exerted their utmost endeavors to introduce the article, and to create a demand equal to the supply; but before this could be accomplished oil at the wells was offered for sale at prices ranging from ten to fifty cents per barrel, and thousands of gallons were allowed to run into the creek.

The only pumping wells opened at an early day, and not abandoned but worked until the present time are the celebrated Economite Wells, located opposite the town of Tideoute, on the Alleghany River, in Warren County, Pennsylvania. These wells are four in number, and are each now pumping 30 barrels of oil per day. Many persons at the present time, in passing through the oil regions, wonder at the number of abandoned wells to be seen. These wells were not abandoned because the borers failed to discover oil, but simply because it did not pay to operate them when oil was so plenty and cheap and no great demand existed for it.

The entire oil regions of Pennsylvania, Virginia, and Ohio were consequently nearly deserted, and the then so-called "oil bubble" exploded. Most of those who had taken leases and had opened wells removed the tubing, and sold their engines, tools, etc., and retired from the oil trade disgusted with their enterprise, and, no doubt, much displeased with themselves, returning to their deserted homes to be ridiculed by the knowing ones, who "always said the undertaking would prove a failure."

Much time, however, did not elapse before a new demand for petroleum was created, and once more thousands poured into the oil regions; and to-day the use of petroleum is universal; and for a cheap and perfect burning oil it has no equal. The old wells are being opened, and new ones going down every day. The Alleghany River, and its great northern tributaries are no more crowded with long rafts of lumber floating with the current to the Western cities. Saw-mills have given place to oil refineries and producing wells. Tow-boats, filled with barrels of petroleum, take the place of lumber-rafts. Villages have suddenly grown into cities. The iron horse rushes with lightning speed around the base of the mountain and down the valley of oil. Rich farms are laid waste. The plow turns no more furrows. The scythe cuts no more bending grain. The farmer's barns are no more loaded down with the fruitful harvest. The farmer himself, with his homespun clothes, is seen no more in the fields. All is

changed! The farm is sold! The old man and his grown-up sons are worth millions, and the old homestead is deserted forever.

We propose to describe the Oil Region as it appeared at the opening of the present year:

Titusville, situated in Crawford County, Pennsylvania, at the head of Oil Creek, had only 150 inhabitants in 1857. In one year it increased to 350. Lumber was worth from five to ten dollars per thousand feet for the best qualities. The number of buildings were about thirty-five of all kinds. The importation of merchandise about one hundred tons per annum. The trade was local, and every thing was done upon the long credit system, and nothing exported but lumber. In 1865 the population is estimated at from 5000 to 6000. Lumber is worth from \$25 to \$50 per thousand, and the supply inadequate to the demand. The number of buildings are now over one thousand. The importation of merchandise, etc., during the year 1863, over the Oil Creek Railroad, was 70,000 tons, and the exports of oil alone equal to 750,000 barrels. It is estimated that the exports from Titusville will amount this year to over \$18,000,000, and the imports will largely exceed those of last year; at least the local trade has kept even pace with the improvements in the way of building. There are now in progress several fine stone and brick buildings, which give the place a substantial appearance. In 1858 town lots could have been purchased from \$30 to \$40 each. In 1864 lots were selling from \$1200 to \$1800 each, and sought after.

The Watson Flat is a tract of flat land, situated in the bend and on both sides of Oil Creek, adjoining and below Titusville. This flat land was at one time greatly in favor; but after the larger flowing wells were discovered below the Shaeffer [Shaffer] Farm less attention was given to lands above. Recently, however, the Watson Flat has been brought into notice again, and several flowing wells have been opened, and now hundreds of derricks spot its surface. This extensive tract of rich bottom-land, being in close proximity to Titusville and the dépôt of the Oil Creek Railroad, will no doubt be found more attractive than the territory farther down the creek. It is said that the quality of oil found here is very superior; and it is generally believed that when wells are sunk to the depth of 1200 feet the largest flowing wells will be found.

Oil in quantities having recently been procured north of Titusville, the entire line of Oil Creek above that place, as far as Oil Lake, is



now occupied, and numerous wells are in process of drilling, causing great excitement in that region.

The Oil Creek Railroad commences at Correy, on the Great Western and Atlantic Railroad, and passes through Titusville and as far down Oil Creek as the Shaeffer Farm, which is about seven miles below Titusville, and nearly half the distance to Oil City. Shaeffer Farm is a fast-growing place, and contains about ten commission houses and several hotels. The bottom-land at this place not occupied by wells is covered with pyramids of empty oil casks, sometimes reaching fifty feet in height. It is proposed to continue the Oil Creek Railroad down to Oil City, there to connect with a new road from Franklin on the Alleghany River, running up the west shore of the river, and tapping the Philadelphia and Erie Road at Irvine.

Funkville and Petroleum Centre, on Oil Creek, are thriving towns. M'Clintockville, on the H. M'Clintock Farm, is growing rapidly. The wells at this place are principally owned by the M'Clintockville Petroleum Company of Philadelphia.

Oil City, at the mouth of Oil Creek, is situated at the base of a mountain under a bluff, and for want of room can never become a very large city. The town consists of only one street, winding down the west side of Oil Creek and the Alleghany River. It contains five or six hotels, all of which are crowded nightly with anxious oil seekers. All the business being done on one street the town has a very busy look.

The town of Franklin, the county seat of Venango County, situated at the confluence of French Creek, with the Alleghany River, about seven miles below Oil City, is a place of considerable note. It is the terminus of a branch of the Atlantic and Great Western Railroad. A very extensive trade is carried on here. Large dépôt buildings have been erected, and thousands of barrels of petroleum are annually shipped from this point. French Creek is quite a large stream, rising in the southern part of New York, and flowing almost parallel with Oil Creek, empties into the Alleghany River. The banks of French Creek, on either side, are dotted here and there with derricks, giving evidence of the existence of many oil wells.

The town of Tideoute, in Warren County, is situated on the west bank of the Alleghany River, about twenty miles above Oil City, and fourteen miles below Irvine. The wells of importance at this place are the celebrated Economite Wells, and some ten or twelve others situated in Tideoute Island and on Tideoute Flats. The oil territory,



on both sides of the Alleghany River, commencing at Irvine and extending down below Franklin, is considered excellent, and is now being fast developed, having recently changed hands at greatly advanced prices. Large flowing wells have been found at many points on the river, and the Alleghany is now ranked next of importance to Oil Creek.

The view on the Alleghany at the mouth of Gordon Creek, below the town of Tideoute, is very fine. As the stranger approaches the river by a winding road over the mountain and turns the point of a high bluff, he beholds far beneath his feet the clear rippling stream of Gordon Creek. In the distance, to the left, winds the Alleghany, with its steep mountain-shores, covered with tall old pines. The derricks of the Economite Wells line the eastern shore. A tow-boat, loaded with barrels of oil, is struggling against the stream. The next turn of the road brings to view the long row of white painted houses forming the town of Tideoute, reaching for over two miles in length along the shore. On the right, running due south, is the river, dotted here and there with beautiful thickly wooded islands, with clouds of black smoke rolling up from among the tall trees. And as the sombre hue of evening shade is cast over the valley, the mind is filled with wonder that beneath the surface of that beautiful landscape is hidden untold treasures, the possession of which leads so many far from home and friends.

The oil from the wells on the Alleghany River is taken to Irvine in tow-boats drawn by horses. These boats are built very stanch, and are made to carry from one hundred and fifty to two hundred barrels of oil. The horses often cross and recross, and sometimes pull and tug up through the centre of the river. The driver has regular fords to cross, and it requires as much judgment to drive tow-horses up the Alleghany as to pilot a steamboat down the Mississippi.

In passing through the oil regions of Pennsylvania one is struck with the primitive mode used in obtaining oil. Inferior machinery and exceedingly small engines are used in most cases, with hardly sufficient power to raise the sucker-rod out of a deep well. Yet wells are worked in this manner, only producing from one to three, or perhaps five, barrels of oil. Often they entirely fail to get a drop of oil. In such cases the wells are abandoned as worthless. At the same time, if the proper machinery had been applied with more powerful engines, twice or thrice the yield might have been obtained. The air-pump is a great improvement, and its application will no doubt

add at least thirty per cent. to the yield of all wells to which it is applied.

Next in importance to the Alleghany River is Cherry Run, on which stream is located the great Reed Well, now flowing 280 barrels of oil daily. The lands on this run and Pit-Hole Creek and Cherry-Tree Run, have been purchased at very high prices, and hundreds of wells are now going down on both sides of these streams. In January of this year the first large flowing well was struck on Pit-Hole Creek, on the Holmden Farm, situated four miles above the mouth of the Creek, and about three miles due east from Funkville, on Oil Creek. Tionesta Creek also bids fair to vie with any other in the region for its oil properties; wells are being put down from its source to its mouth, and already several producing wells are in operation here. The entire counties of Venango, Warren, and Crawford are now being prospected for oil. One can not ride through a lane, over any obscure road, up mountain paths, or, after leaving his horse, climb a ledge of rocks, or work his way through jungles of undergrowth, without meeting with prospecting parties seeking new oil lands. Mud, rain, or floods are no obstacles in the way of oil-land hunters; they ride their livery horses at full speed from well to well, asking a thousand questions.

The oil regions are dotted here and there with refineries, where the crude oil is distilled and prepared for burning purposes. Many changes have taken place, and vast improvements made, in the refineries of oil since the first were erected. The most extensive establishment for this purpose, now in operation in the immediate vicinity of the oil regions, is at the town of Correy, in Crawford County, Pennsylvania—a new and thriving place, situated at the crossing of the Atlantic and Great Western and Philadelphia and Erie Railroads. The building is entirely of brick, and was erected by Samuel Downer, one of the pioneers in the business, at a cost of \$150,000, including machinery. Upward of 200 workmen are here daily employed, and when the works are operated to their greatest capacity 300 barrels of crude oil are daily required.

The Virginia oil regions are located in the counties of Pleasants, Richie, Wood, and Wirt. The best territory is found on the Ohio, Little Kanawha, and Hughes Rivers; on Goose, French, Cow, Calf, Bull, Horseneck, Worthington and Stillwell Creeks; on M'Elroy, Bull, Campbell's, Rawson's, Nettle, and Riffle Runs. The town of Parkersburg, on the Ohio, at the mouth of the Little Kanawha, is the grand

headquarters of all oil speculators who visit that region. The entire territory embraced in the above-named counties has already changed hands, and most of it is held by speculators, who are offering it in Eastern markets.

Very little has been accomplished in the development of these Virginia lands compared with the operations in Pennsylvania. Since their discovery some wells have been sunk, and great quantities of oil have been taken from them; but the great developments are yet to be made.

The principal wells now in operation in West Virginia are on "Horseneck," a small creek tributary to Bull Creek. The latter stream flows into the Ohio a few miles above the mouth of the Little Muskingum River. The "Jackson and Peto" Well, on "Cowneck," was sunk to the depth of 587 feet, and flowed, when first opened, 1000 barrels daily of fine quality illuminating oil. The "Jackson" Well, on the "Mansion House Ford," at 100 feet, flowed 200 barrels of the best quality of lubricating oil. A well on "Horseneck," when first opened, flowed 40 barrels, and afterward only water; but when properly tubed, and a new seed-bag supplied, it flowed 1000 barrels daily for three days.

On the territory from French Creek to Bull Creek, on the Ohio River and tributaries, operations are quite brisk. Twenty-five wells have been put down, and nearly fifty more are in process of boring. Many wells are going down on French Creek. The "Gillfillen" Well, on "Horseneck," is 250 feet deep, and at one time yielded 500 barrels per day. On "Rawson's" Run there are two wells, one of which yielded, when first opened, 700 barrels daily, and the other 45 barrels. On the Little Kanawha, at "Burning Spring," many productive wells have been found, yielding at one time from 25 to 1000 barrels daily.

The Ohio oil regions are located principally in Washington, Morgan, and Noble counties. The city of Marietta, situated at the mouth of Great Muskingum River, is one of the oldest places in the State, and is where all Ohio oil speculators congregate. The Ohio lands have very rich surface indications, and promise to be as fruitful as any yet discovered in the country. Capitalists from all parts are flocking to these new regions, and are taking up all of the lands they can get on the Great and Little Muskingum Rivers, Duck Creek, Cow Run, Pawpaw, East and West Branches of Duck Creek, Whipple Run, Wolf and Federal Creeks.

New oil lands have recently been discovered in Adams and Sciota counties, on the Ohio River, about ninety miles above Cincinnati. The surface indications are very promising—such as oil on the water in the marshes and water-courses, the upheaval of the sand rock, and hills of shale saturated with petroleum, one ton of which has produced by distillation fifty gallons of oil. Some 5000 acres have been purchased here by the New York and Ohio Petroleum Company, now operating.

In sinking a well for oil many curious and wonderful discoveries have been made. On the lands belonging to the Story and M'Clintock Petroleum Company, of New York, located on Caldwell's Creek, near Titusville, in sinking a well in October last the drillers passed through a layer of rock four feet in thickness, at the depth of forty feet; and another layer, six feet thick, at the depth of fifty-six feet; and at the depth of seventy feet, after passing through two thick layers of hard rock, the drill passed through a log eighteen inches in diameter.

Oil wells are put down to a variety of depths, from 100 to 1100 feet. The mode of sinking a well is as follows: After the spot is decided upon, which is in most cases in the lower bottom lands, a stake is driven into the ground at the spot where the bore is to be commenced. A derrick is built, from twelve to sixteen feet square at the base, and about forty feet in height, running to a point at the top. The engine-house is erected, and the necessary machinery made ready within. Sections of iron pipe, six inches in diameter, are then driven into the ground, by means of a pile-driver, until the first layer of rock is reached, which, in most cases, is found at a depth of thirty-five or forty feet below the surface of the ground. Great care is taken that this iron pipe is driven plumb. After the rock is reached, and the earth within the pipe is removed, a block and tackle is rigged at the top of the derrick, and the drilling tools, weighing in some cases 900 pounds, are hoisted up and dropped into the driving-pipe down to the rock. A temper-screw is then attached to the top of the drill by means of a rope, and made fast to the end of a walking-beam. The walking-beam is a heavy horizontal piece of timber, supported in the centre by a Samson-post. The other end of the walking-beam connects with the driving pulley by means of a crank. The engine drives the pulley, the end of the walking-beam rises and falls, and thus the drill is raised and lowered at will. At intervals, during the process of drilling, a tool called a "Reamer" is inserted in the well, and the bore is increased to the proper size. A sand-pump is a metal case



from five to ten feet in length, constructed with a valve at the bottom. This sand-pump is lowered into the well at intervals, and when it reaches the bottom the valve opens and admits the borings, and when the pump is raised the valve closes, and the contents are brought to the surface. After the bore is thus cleaned the drill is once more inserted, and the drilling is continued.

In boring a well a correct journal is kept, showing the different kinds of rock and earth passed through, and the exact points where water-courses, gas, or shows of oil are found. If a large vein of oil is struck, the well is immediately tubed with a 2 or 2½ inch iron pipe, put together in sections. The water from water-courses and the surface water is prevented from flooding the well by means of a leathern bag, called a seed-bag, filled with flax-seed, which is placed on the outside of the tubing and within the earth chamber below the water-courses. When the flax-seed becomes saturated with water it swells, and completely shuts off all communication with the bottom of the well on the outside of the tubing.

If the vein of oil struck proves to be large, and the pressure of gas is sufficient, the oil will flow out without the aid of a pump; but in most cases a pump is required, in which case a copper working barrel is placed at the bottom of the well, and attached to the lower section of the tubing, with a valve at the bottom. The upper valve is connected with a sucker-rod, the end of which is attached to the end of the walking-beam. The tanks or tubs to receive the oil are mostly made of wooden staves, and are located at some distance from the well, and are connected with it by means of iron tubing attached to the spout of the pump, and through which the oil flows.

It is almost impossible to give the exact cost of sinking and completing a well at this time. Prices vary in different localities, and the cost of drilling ranges from \$2 to \$3[.]50 per foot. Including all of the necessary equipments, the present cost of sinking a well complete would be between five and six thousand dollars.

Naphtha, the lightest variety of petroleum, is found in Persia. It consists of carbon 82.20, and hydrogen 14.80, and is the only fluid free from oxygen. The next variety found is the petroleum proper, or American petroleum, which is a much heavier and thicker fluid. Another variety is found, called maltha, which is less fluid than petroleum, resembling tar or pitch. In Derbyshire is found still another variety, called "elastic bitumen," which is flexible and elastic, and about the weight of water. The last variety, called "compact bitumen"



or asphaltum, is black in color and solid like coal, its specific gravity is 1 to 1.6. In the island of Trinidad is a lake, three miles in circumference, that is now one solid mass of black compact bitumen, which is supposed to have been at one time a lake of liquid petroleum.

No positive conclusions have yet been arrived at, giving any correct idea of how deep down in the earth the greater basins of petroleum are to be found. The oil from the largest flowing and pumping wells so far discovered is obtained from beneath the third sandstone. Several large producing wells have been sunk without finding this third sandstone. It is, however, believed by most of the experienced borers that the great basins are yet to be discovered at the depth of from 1500 to 3000 feet, where a never-failing supply of petroleum will be reached. It is believed by some that the formation of petroleum is still rapidly going on in the laboratories of Nature, and that enormous quantities of carbonated hydrogen gas, which accompanies the oil, is undoubtedly evolved in its formation, and were it not constantly forming would soon all escape, and flowing wells would be an impossibility. It is impossible, however, to fathom the hidden mysteries of the petroleum world below. Astronomy can pierce the depths of space, but Geology can only guess what is going on a few thousand yards below our feet.

## Investments in Oil Wells

The "oil fever" attracted great numbers of eager investors, both in the form of men who came to the oil country to drill wells, and those who stayed at home and hopefully bought oil stocks.

J. H. A. Bone, as a reporter for the Cleveland *Herald*, toured the oil region and wrote a searching résumé of what could be expected. This appeared in his book titled *Petroleum and Petroleum Wells* (Philadelphia, 1865), pages 146-153.

An interesting point is that the first edition of his book was published bound in blue paper wrappers, had fifty-nine fewer pages than the second edition, and carried an advertisement of the Weikel Run and McElhinny Oil Company, Venango County, Pennsylvania, listing J. D. Rockefeller among the directors. This is probably the first appearance of Rockefeller's name in print as pertaining to his interest in petroleum.

The extraordinary success of the pioneers in oil mining, the immense returns frequently resulting from small expenditures, and the high value of the product, created by the rapidly increasing demand, soon turned public attention to the subject, and capital was freely invested in oil enterprises. Some of these were failures, but the prizes won were so enormous in proportion to the stakes that the occasional disasters were wholly lost sight of, or served but as warnings against some particular location or mode of working. The manifest folly of risking the entire means of an individual on the hazard of a single well yielding oil led to the establishment of joint-stock companies for the prosecution of the enterprise, and the eagerness with which their shares were taken up soon multiplied these companies to an enormous extent. In the Spring of 1864 several new companies were organized. During the Summer and Autumn their increase was rapid, and in the Winter of that year, and Spring of 1865, new companies were organized daily in the leading cities. To give their present number would be useless, when every day brings an addition.

Of course very many of these companies have no real value. Their lands, where any title to lands really exists, have no indication of the presence of oil in quantities to warrant boring. The only object of their existence was the creation of shares to be sold at a profit by the sharp-witted projectors. The originators of such companies are moral swindlers, and only evade the legal responsibilities of actual swindling by the ingenuity with which their "prospectuses" are framed. On close examination it will be found that, although appar-

ently asserting the value of their lands as oil territory and promising that rich results will follow their working, they in reality assert nothing and promise nothing. They "keep the word of promise to our ear, and break it to our hope."

Of the remaining companies, organized in good faith, a large proportion will probable [*sic*] meet either with failure or but small success. It can scarcely be otherwise when it is considered that in their anxiety to get possession of lands in which oil is supposed to exist, many of these companies have been compelled to purchase partially or wholly undeveloped property, the sole inducement being the existence of one or two good wells on the same stream, although several miles distant. Some companies will, as in many previous instances, prove mines of wealth, whilst others will yield a good business percentage on the investment.

The "oil fever" that at present pervades all ranks and classes in the United States, and is spreading to other lands, has been compared to the South Sea Scheme, Law's Mississippi bubble, and the *Morus Multicaulis* excitement. It differs from all of these in the important particular that it is based on an actual fact, of proportions so gigantic that it serves as an excuse for the most extravagant anticipations of those interested. The cases cited were essentially bubbles, wholly speculative and based on a supposititious state of affairs. With the first breath of distrust the bubble burst, and not a vestige was left of the magnificent schemes save the ruined fortunes of their believers. That the present inflation will, sooner or later, be followed by a corresponding collapse, must be expected. Hundreds of companies will go down beneath the crash, and sink in merited oblivion. With them will go many enterprises deserving a better fate, but which will be unable to stem the downward tide. Even those which are well established and have given proof of their solvency and reliability will probably suffer for a time, but in the end will rise to their legitimate position.

The only instance in the speculative excitements of the past at all resembling the "oil fever" of the present day was the English "railway mania" of 1845. The success of the railways then existing stimulated investment in similar enterprises to such an extent as to create a species of insanity for the formation of railway companies and the possession of railway shares. Lines of the most absurd and impossible character were projected and found ready sale for their shares. Of course the delirium ended at last, and with returning sanity came the

extinction of hundreds of companies and the ruin of thousands of people. But the real value and importance of railways remained unimpaired, for there was a solid basis on which the speculative superstructure had been erected, and the past twenty years have seen the rapid and permanent growth of a railway system but little inferior in extent to the wild dreams of 1845.

That this will be the case with the petroleum interests of the United States cannot be doubted. The business which in six years has grown from nothingness to its present gigantic proportions cannot be seriously injured even by a great panic, should such an event occur. It has been woven so closely and thoroughly into our daily life that the demand must continue to increase. From Maine to California it lights our dwellings, lubricates our machinery, and is indispensable [*sic*] in numerous departments of arts, manufactures, and domestic life. To be deprived of it now would be setting us back a whole cycle of civilization. To doubt the increased sphere of its usefulness would be to lack faith in the progress of the world. To fear the exhaustion or diminution of its supply would be to doubt the beneficence of the Providence that never makes known a benefit to man for the purpose of distressing him by its withdrawal.

A noticeable feature in the history of the petroleum business of the United States is the peculiar period at which it made its appearance, and the important part it has played in our national affairs. At the time when we were struggling to maintain our existence at an enormous cost, when the balance of trade with Europe was against us, and the shipments of gold were draining the life-blood of our commerce, a sudden and unexpected trade sprung up in the article of petroleum. From a few thousand gallons in 1861 the annual exports from the United States increased in 1864 to nearly thirty-two million gallons, the value of the shipments for the past two years amounting to over thirty million dollars, thus materially reducing the export of gold and increasing the prosperity of the country by this means, as well as by stimulating industry within the national borders. This was effected by the employment of superabundant capital and the development of lands that had hitherto been considered valueless. To facilitate the work railways have been built and are building, which would not have been constructed but for the existence of petroleum, but which will prove of great value in opening up neglected territory, enhancing the value of lands, and at the same time be profitable investments in themselves.

A word of caution with regard to investments in oil lands and oil stocks will not be out of place. It is well to remember that "all is not gold that glitters," and the "good thing" which the plausible "projector" attempts to induce you to invest in, may be a good thing for *him*, but a bad thing for you. Before investing, see that the parties directly interested are responsible and honorable men. That is not all. Good and honorable men are sometimes prominently connected with enterprises of which they personally know nothing, trusting to the representations of some other person directly interested. Ascertain that point before risking the money you may never see again. With regard to the particular section of country in which to invest, no other advice can be given than that it is, as a general rule, safer to put money into property where paying wells already exist—should such property be in the market—than in wholly untried country. At the same time, where the real value of the property is unknown, the stakes are smaller, and the prizes, if found at all, proportionately larger. It by no means follows that because one well has proved a great success, another sunk in its neighborhood will also be fortunate, although the enormous increase in the value of land for miles around a successful well immediately after the "strike" seems to prove the generality of that belief. At the same time, there is better hope of obtaining oil when surrounded by yielding wells than if encompassed by "dry holes."

That considerable sharp practice is frequently connected with the formation of oil companies and disposition of the shares is to be supposed. Sharp-witted men do not work for nothing, and such men have found a rich harvest in the oil speculations of the present day. A man of this class goes into the oil territory, finds a patch of land suited for his purpose, and engages to buy it at five or six times its real value, paying from twenty-five to one hundred dollars as deposit, and agreeing to pay the balance on a certain day, or forfeit his deposit. He then endeavors to dispose of it to a party of fellow speculators at twenty-five to fifty per cent. advance. These again put it into a stock company of, say, \$100,000, "reserving \$25,000 as working capital." The remaining \$75,000 of stock is divided among the "partners on first principles," as pay for the land, so that if the stock sells freely at a fair figure, a handsome profit is divided. It is a common practice for the projectors of a company to connect a large amount of undeveloped land with an interest in some dividend-paying well as "a



sweetener." In some cases this proves a good thing for the stockholder, and in other cases he is "sweetened."

Frauds are not unfrequently perpetrated by "planting" oil in dry wells. Some notable instances of this have been made public, in which the contrivances were of the most elaborate character. The petroleum interest is no more accountable for such crimes than society is chargeable with the guilt of the occasional pickpocket or burglar.

In conclusion, invest no more money in oil wells, or in any other speculative business, than you can lose without being crippled in resources[.] If able to spare the means, examine closely, judge carefully, then invest boldly and await the result with patience, with our wishes that you may "strike oil."

## Petrolia, Pennsylvania

Oil Creek was an invaluable waterway through the first petroleum field. It served as a means of transporting all kinds of equipment as well as crude oil in bulk and barrels. Perhaps the most unusual craft to ply the waters of the stream was the packet boat. B. F. Taylor, of Chicago, toured the oil region accompanied by Captain Geggie, superintendent of the United Petroleum Farms Association. He wrote of his trip by packet in an article that appeared in the Warren, Pa., *Mail*, December 9, 1865, from which the following excerpt has been taken.

I was wearying myself thinking of the six miles tramp back to Oil City again, when the Captain said, "Let us take the packet!" Had he said, "Let us take a great white elephant," the proposition could hardly have been stranger. But down to the bank we went, and presently a reedy twang, like the drone of an angry bee, short, sharp and reduplicative, was heard.—It was the tin horn of the packet "Captain." Then round the bend a horse came splashing into sight, and after it a scow, like Christopher "under canvass," and beneath it sat a dozen passengers. The starboard eye of the "Captain descried us, and the packet crawled out to shore, took us aboard, and away we went. The skipper's duties were manifold; he steered the ship, he blew the horn, he bailed the boat with a shovel; he kept watch for stragglers ashore. And the boat slipped along over the rocks like an eel; it went *any* where; it would have "run on a heavy dew." Whenever the skipper saw anybody on the shore, he gesticulated at him

frantically, and if he beckoned him, he brought to, and cried out to the "man at the horse," "ground her"—"fetch her to!"

And so we halted along the creek like a milk-wagon. Our Admiral was admirable, and his seamanship was astounding[.] "Mind at that rock," he cried to his Lieutenant; "hurry up lively." A herd of cows stood directly in our route, refreshing themselves in the shallow water. "What shall I do?" cried the timid Lieutenant. "Run 'em right down if they don't get out of the way!" roared the indignant Captain. To be stopped on the high seas by a drove of cattle! not he, indeed; and is'nt [*sic*] there a law against the obstruction of navigation! And so we passed safely through the crowd; one malicious old mother of the herd whisking her tail in contempt, and aspersing some of the passengers as we went by. Nearing Oil City, the excitement of the crew became intense, for they were racing with the Rouseville stage.—They unshipped a fresh horse; they used the whip like a flail, they rushed on without the fear of wreck or mermaid, and as the city came in sight, the captain dipped his horn in the water to give it a clearer note, and crowed a shrill tin crow like a triumphant game-cock. And so we safely landed, preserved from perils by sea.

B. F. T.

## A Trip to the Oil Regions [Pithole]

A rather early visitor to the oil country was a reporter we know today only as J. D. M. An installment of his interesting and often humorous account appeared in the Doylestown, Pa., *Democrat*, October 3, 1865. This description of the Pithole region is considered accurate and fair in every respect.

We parted with the reader in last week's issue at Rouseville, inadvertently printed Raubsville. At this point Cherry Run flows into Oil Creek. We leave the latter and go up Cherry Run to Plumer, a distance of five miles. This country has been a favorite one in the eyes of the "ile" speculators, judging from the number of derricks as they stand about as thick as apple trees in a well filled apple orchard, some in the flat lands along the stream and others up on the bluffs. There is an extensive oil refinery at Humboldt, about one mile from Plumer. It is now one o'clock, P. M., and the travelers have attained the wonderful distance of fifteen miles since eight in the morning, six of which was by steam power and railroad, as the wagon, (it must no longer be called a hack) stops at the hotel, the bell rings for dinner—

an ordinary dinner spread in plain style is furnished for the low price of one dollar. We "wait for the wagon" about half an hour, when the cry is "all aboard for Pithole." Each one selects the softest "board" he can find and away we go at snail's speed. Our course now lies over the hills to Pithole. The reader should bear in mind that all oil producing territory lies along the streams and that the land intervening is lofty hills, being pretty clever sized mountains. From Plumer to Pithole one sees but little indication of oil fever. Occasionally there is a spot where it has made its mark either by the commencement of boring, or a dry and abandoned well. Finally from the top of a mountain the traveler has a sight of the long promised land, Pithole, which he expects in due time to reach, if he does not get his neck broke going down the mountain. Finally the wagon reaches the place of destination and we are driven up to one of the hotels, where each one proceeds to divest himself of a great amount of dust that has been accumulating upon him since morning. "Pithole City"—that is the corporate name—is the wonder of the world. It does not have its parallel in history. The ground whereon it is erected was, six months ago, farm land, now it contains six thousand inhabitants. One gentleman who was familiar with it declared that in in [*sic*] the space of sixty days it rose from nothing to a city of four thousand inhabitants. It is built on a gently sloping hill which affords good facilities for drainage. The building[s] are all of frame, and the lumber of many of them excepting the floors, doors, window casings, &c., is a stranger to a plane. It is true some of them are built in better style, but the finish is not very smooth. The better class of stores are lined and ceiled with mill worked boards, and both ceiling and sides are put on similar to outside weather boarding by loping one edge over the other. The lumber being green, this is done to prevent the joints opening. The houses are not framed as in Bucks county, a frame of six by eight is laid on four posts, a few feet above the ground—there is no time to dig cellars—and the boards put on upright, a small piece of timber being nailed across at the proper height for joists for the second story. When time permits, the joints between the boards are stripped on the outside. Generally time is given—on account of the scarcity of carpenters—for the weather boards to season. When three sides of the building is up and the roof on, it is often inhabited, and business commenced before the front is put in. The hotels generally present a pretty fair exterior, and perhaps the office and barroom are papered with rich gilt paper, and the partitions hung with pictures,

but go beyond this and you will find unplanned boards and larger crevices in the partitions. They have high sounding names for the hotels, such as St. Nicholas, Astor House, Metropolitan, &c., and the charges are about equal to these hotels in New York, being one dollar per meal, and the same for a bed. The city is built close to the valley or boring territory. This valley is from six hundred to one thousand feet wide, sparsely covered with timber, mostly wild cherry and birch. In some places it is quite rocky. The city is about six miles from the mouth of the creek. A company has been formed under a charter from the Legislature to lay pipes from Pithole City to the Allegheny river. They were then engaged in putting down a six inch iron pipe to convey the oil from the wells to the river, six miles, from where it can be taken to Pittsburg by boats. The creek takes its name from the "bottomless pit" found on a bluff about one hundred feet above the stream. This pit has long been known, and frequent attempts made to sound its depth, but without success. Stones are thrown into it but no one can hear them strike bottom. There is a continued flow of gas from it, and it looks like the heat on the top of a lime kiln. It is held in contemplation to build a railroad from Pithole to the confluence of the creek with the Allegheny, to be run by horsepower. It would be dangerous to run locomotives through the country where wells are producing oil, on account of fire. Quite a town is being built up at the junction of Pithole creek and the Allegheny, in view of the business to be produced by pipe and railroad.

Pithole oil region comprises quite a number of farms, among which are the Holmden, Rooker, Cowpland, and others. Two gentlemen, Messrs. Plather and Duncan, purchased one of these properties and leased it to the United States Companies, a New York concern, for one-fourth of the oil produced. The U. S. C. have divided it off into small parcels, and leased these lots to other parties who are to bore wells, operate them, and give the U. S. Co. one half the oil produced. Any quantity of wells are now going down. They bore from 625 to 650 feet. This is generally done by contract, the parties boring to tube and test the well. The cost is from \$5,000 to \$8,000 generally, approaching closely to the latter sum. The United States company has a well called by that name which produces about 800 barrels a day, of 24 hours. It is a flowing well. They have 23 tanks holding 1200 barrels each, to receive the oil. They also own the Twin Wells, flowing about 600 barrels per day. The Grant well flows one thou-



sand per day. The Island well from 300 to 400 barrels. This is a curiosity. The flow is of an intermitting character, it flows for four or five minutes and then ceases for about that length of time. It will commence with a small stream not larger than a goose quill, and increase in size until it fills the two inch pipe to its utmost capacity. The flow from all the wells is accompanied with gas. When at its height at the Island well it gushes out with great force, sufficient to knock a man over if it struck him on the head.

While sitting in the woods watching the progress of matters, the workmen who had been engaged testing well No. 54, having exhausted the salt water and procured a flow of gas, withdrew the succor [sucker] rod, which was followed by an immense flow of gas accompanied with oil. In a few minutes a column of oil rose to a height of sixty feet, and the gas flowed ten or fifteen feet higher. The workmen immediately applied themselves to the task of connecting the pipes to conduct the oil to the tanks. This is an unenviable work, and the men were nearly suffocated by the oil and gas. They were obliged several times to cease operations and take a breath of fresh air, when they would resume operations again. Before they succeeded they were saturated from head to foot with the oleaginous fluid. Their cavalry boots became filled and overflowed. This well flowed one thousand barrels per day. Some of the stockholders were present taking an interest in matters and could not conceal their pleasure at seeing the flowing "ile" producing golden treasures. Others took it more complacently and exhibited but little excitement. Yet there was not a man who witnessed the interesting spectacle but what manifested some excitement. To see a column of oil rising in the air to a distance of sixty feet, without any visible motive power, is not often witnessed more than once in a life time, and one could not help becoming somewhat excited. There are other flowing wells, but their names are not now remembered. It is estimated that there are 1000 wells on Pithole creek, either in process of boring, yielding oil, or abandoned. There are a number of wells yielding oil in small or large quantities, but they require pumping. Some of them yield but 10, 20, 50 and 100 barrels per day. Every barrel of oil pays a United States tax of \$1.00 in its crude state. This tax is very unequal and onerous. Some oils are worth \$15 per barrel at the well, where other oils are so much lighter and yield but about one third the amount of refined oil, are worth but \$5, and others but \$3. But little of the oil at Pithole is worth over \$3 per barrel at the well; while that of Tideonte [*sic*] is



worth \$15. Messrs. Plather and Duncan are growing richer and richer every day, and every oil producing well that is opened adds to their income. Two fine hotels are in course of erection, one just as you enter the woods from the main street, and the other beyond the limits of the city. These houses are both being built in good style and when finished will add greatly to the comfort of the visitor. A theater has just been completed and the play commenced. Business of every kind seemed brisk, but particularly the liquor trade. Stores of every kind are springing up, and houses command a high rate. One building 16 by 20, one and a half stories high, rented for \$2 per day. It sold while we were there for \$2000. Mr. Dickerson said it had been offered him for what it cost to erect it, \$800, soon after the opening of the city. Lumber has been bringing \$40 per 1000 feet. Mill-worked lumber \$60. We were pleased to meet our old neighbor Wm. R. Dickerson, counsellor at law, there. He was in full tide of successful business. It is said there are but 60 females in a population of 6000. Poor chance for bachelors.

Labor commands high wages, a common day laborer receives from \$3 to \$6 per day; carpenters from \$5 to \$7, and other mechanics in proportion. The owner of two horses and wagon expects to receive at least \$20 per day for its use with a driver. For a horse, saddle and bridle, per day, \$4 to \$5. The price of hauling oil from Pithole to Shafer, is from \$2 to \$2[.]50 according to the condition of the road. Five and six barrels make a load for two horses. Eggs were 35 cents a dozen; apples 3 for a dime; peaches 4 for a quarter, small and poor at that. Every thing in the woods where oil is produced is smeared with it, the trees, bushes, &c. A large quantity leaks from the tanks, pumps, &c., and excavations are made in the ground, and the oil lead to them by little gutters. In crossing one of these a lady who was walking a little in advance of us made a *faux pas*. She had the misfortune to place her foot upon a greasy spot, slipped and fell into the ditch. We thought it no time to stand upon ceremony, nor wait for an introduction, as the dandy did when he saw a lady on the street, we stepped forward, gave a helping hand and extricated her from the unpleasant predicament her mishap had placed her, and received her thanks. We could well afford to do this as the lady had just "struck ile."

There is a colony of Bucks countians about 14 miles north of Pithole, on West Hickory run, three miles from Tideonte. Messrs. Joseph and Joshua Peirce are cutting timber and sending it to the different markets in the vicinity. Large quantities go down to Pithole. Some

25 or 30 men have gone out there from Bucks county, chiefly from Bristol.

The roads through this country are in a terrible condition. But few of them over which we were obliged to travel have ever been laid out. They are merely open for present use. Rocks, stumps, chuck holes and hillocks abound. They are very dangerous, some of our passengers were thrown from the hack by it falling into chuck holes. No pen can describe them. They are generally but a single track and teams have frequently to wait upon one another until a long string pass before they can proceed. Such carriages as are used in Bucks county would not last a week on these roads. Hundreds of people are obliged to walk to and from the railroad to Pithole for want of vehicles. Many prefer it on account of the danger of upsetting. We pitied one dandy we met on the road. He was evidently a resident of some city and came out there in the same clothing he would promenade Broadway on [or] Chestnut street. His costume was light fancy cassimere pants and vest, with a thin cloth coat, cassimere hat, and thin low patent leather shoes. He certainly had no idea of the country he had to travel through. Arriving at Shafer and finding no hack to convey him, or not disposed to pay 30 cents a mile, he, in company with numerous others, started on foot. They had progressed about two miles when a heavy rain set in and in fifteen minutes there was mud enough to cover the tops of his shoes. He was in a pitiable plight. A piece of road had been so cut up by the loaded wagons that it was almost impassable. An enterprising young fellow felled some trees and with them made a corduroy road for about 50 feet and opening a space of perhaps 50 feet or more, stationed himself at one end and demanded 25 cents for the privilege of crossing it with a team. Every loaded wagon paid it to him rather than run the risk of being swamped.

From Pithole we made our way back to the railroad, at Shafer, on Oil Creek. There is quite a settlement at this point. It has been built up since the discovery of oil on the Shafer farm. It is six miles below Titusville. Miller farm is a mile above Shafer. This is also an oil producing farm. Indications of oil operations are to be seen all the way up the creek to Titusville, which is just in the edge of Crawford county. Here we found most excellent accommodations at the "McCray House," superintended by Fred. S. Nichols. We most cheerfully recommend this house to any one visiting Titusville. The balance of the journey is reserved for a future number.

J. D. M.

## Method and Cost of Sinking Wells

One of the best descriptions as to how wells were drilled and what they cost in 1865 is provided in a book where the information has been very seldom seen because of the misleading title and the major subject of the work. A New York State Senate document on coal would hardly be the expected source for such an excellent treatise on oil well drilling. The document is S. W. Sweet's *Report on Coal* (State of New York, Senate No. 71, Albany, 1865), and this excerpt appears on pages 90-92.

Wells are now sunk in Pennsylvania exclusively by engines. The old method (and the one mostly pursued at present in Virginia) was with spring poles, at a cost of from \$3.50 to \$4.00 per foot, the cost averaging with the engine only from \$2.50 to \$3.00. The engines used are from eight to twelve horse power, costing \$1,800 and \$2,400, delivered on the spot. The twelve horse power engine is generally preferred, as with this power two wells are sunk and managed at the same time, being located about seventy feet apart.

The location for sinking a well is chosen from the dip of the rock, course of stream and concentration of ravines, with indications of great disturbance by upheavals and misplacements. A derrick is then built over the spot of three-inch plank, from forty to fifty feet high, ten square at the base, and from four and a half to five feet square at the top. The engine is located about thirty-five feet from the derrick, over which a shed is constructed to protect the fuel and machinery.

The first process is driving a cast iron tube to the first stratum of rock, which varies in depth from forty to one hundred feet. This tube is six inches inner diameter, with one inch thickness of metal, cast in sections from ten to twelve feet long, connected by abutting them together and welding over the joint a wrought iron band a quarter of an inch thick by four inches in width, which makes the joint air tight when cooled. The ends of the tubes are prepared to receive this band, thus leaving no projections at the joints. The method of driving the tube is as follows: A wooden cylinder is erected opposite the engine and at the foot of the derrick, with a wheel five feet in diameter connected by a band to a similar wheel attached to the engine, by which the cylinder is made to revolve. A cable, coiled around the cylinder, passes up through a pull[e]y block at the top of the derrick, and attached to the ram (an oak timber seventeen feet long and sixteen inches square); the latter is raised and dropped upon the tube by tightening and suddenly loosening the cable by a man stationed with one end of the cable at the cylinder. The end of the tube is protected by a thick

iron cap, that plays loosely under the blows of the hammer. The tube is cleared out by a sand pump six feet long, with a valve at the bottom, which, when filled, is drawn up.

The ram, with its guides, are now removed, and the drilling is commenced. A post is set in the ground midway between the well and engine, upon which a walking beam is fixed, one end connected by a vertical rod with a crank attached to the engine, and the other to the cable or drill. A screw about four feet long is attached to the cable at the end of the walking beam, for adjusting the length of cable as the well is deepened. Two men are required to keep the drill constantly revolving, changing the drill and handling the sand pump that removes the drillings every three to four feet. The drill and bar attached is about thirty-five feet long, weighing from seven hundred to eight hundred pounds. The cable from the drill to the walking beam is from one and a half to two inches diameter. The drill proper is about four feet long, and weighs from seventy to one hundred pounds, thickened and sharpened at the end to four and four and a half inches wide. After the well is down it is tubed with two-inch gas pipe. A seed bag is let down surrounding the tube, which, when saturated, swells and shuts off the water from springs met with in descending, and the surface waters.

The average cost in sinking the deepest wells is about \$6,000, and the lowest cost for a well six hundred and ten feet deep is about as follows:

One 12-horse power engine, delivered .....	\$2,400
Six hundred feet depth of well at \$2.75 per foot .....	1,677
Tools .....	375
Derrick .....	200
Sheds .....	350
<hr/>	
Total .....	\$5,002

It takes on an average six weeks to sink and tube a well of the above depth; some days only twenty inches and others from eight to twenty feet are accomplished.

All the producing wells have more or less tankage, each tank holding from three hundred to twelve hundred barrels. The Reed well has a tankage for 3,000 barrels, and the Coquette 20,000 barrels. As the tanks are filled the oil is drawn off by a faucet at the bottom into barrels.



## Appearance of the Country, etc.

As a correspondent for the *New York Times*, William Wright had planned to spend several days in the Pennsylvania oil region collecting material for some articles. He found, after three days, so much contradictory information that he decided to visit all the major wells and areas and try to ascertain the true facts.

He spent four weeks at his task and produced a searching examination. Where the phrase "the honor of oil" had been long known and respected, it is somewhat amazing that Mr. Wright came up with an exactly opposite view as to honor in the oil industry! The following part of his report is from his book *The Oil Regions of Pennsylvania* (New York, 1865), pages 55-60.

No community on the face of the earth has a smaller proportion of drones to the number of working bees than Petrolia. This observation applies to city, village, and single shanty. Nobody but has a hand engaged in *some* business or pursuit; many in half a dozen. If a man betakes himself to mercantile life, he reckons upon giving it from twelve to fifteen hours per day, filling up his leisure moments with speculation or an agency. The young fellow who would stand at the street-corners elsewhere, there kills two birds with one stone by offering to sell wells, or interests in wells, or leases, or refusals to those whom he can button-hole. If Satan found mischief *only* for the idle, his occupation would be gone in the oil region. Perhaps the high cost of living has impelled the slothful as well as the diligent to this remarkable activity, but it seems to be an admitted principle on all hands that people have gone thither to *work*. On this account, the country is essentially orderly. Property as well as life is more secure than in any Eastern city. Even drunkenness is by no means as common as might be expected, in view of the rough-and-tumble modes of life prevalent. I have seen less of it in Oil City or Titusville than in country towns of the same size elsewhere. Yet I do not believe that one man in fifty is a member of the temperance association. It is said that the vice of drinking prevails to a considerable extent on Sundays on some of the farms, but the wonder is that it should not have become universal.

Last fall, intense excitement prevailed near Oil City, caused by the dead body of a resident having been found close by it. He had been murdered in open day. An indignation meeting held appointed a vigilance committee, and the whole population joining in chase of the criminals, they hastily decamped. It is supposed they were part of a



gang from the East, who expected to "operate" in Petrolia as some of them had done in California.

During the first three or four years of the oil excitement, little respect was shown to the first day of the week, and few attempts at establishing Christian worship were made outside the focal points. The flowing wells poured out their wealth on that day as on the remaining six, and the pumps copied, as far as possible, after the others' example; so the people pumped, and barreled, and drove, and shipped petroleum on Sunday as well as Saturday. Man lives not by oil alone, however, any more than by bread. A change has been gradually taking place in this respect, giving man and beast the advantage of a septennial day of rest. Perhaps this improvement was brought about by the men refusing to work; perhaps as a stroke of policy, to retain the more sober and steady portion of the mechanics and laborers; perhaps from conscientious motives on the part of the large companies. Sunday work seldom takes places [place] now, except in wells which have been flooded, or are in danger of becoming unserviceable for a time, in consequence of the water getting the upper hand.

At Rouseville, Petroleum Centre, and a few other points, small buildings have been erected, to serve for chapels on Sunday and school-houses during the week. I am inclined to believe these are better sustained by commutations in money than by personal devotion, and that the worshippers are more disposed to purchase tickets to the Celestial City for their friends and relatives than to get aboard of the cars and ride themselves. Like some other matters of importance, this is left till the fortune-hunters return to "the States." The fact is, in Petrolia, the church universally believed in is an engine-house, with a derrick for its tower, a well for its Bible, and a two-inch tube for its preacher, with mouth rotund, "bringing forth things new and old," in the shape of two hundred barrels per day of crude oil, mingled with salt water. In the principal business-centres, regular societies have been instituted; but that practical Christianity which leads men not only to love and fear God, but love mercy and hate covetousness, is not in a flourishing condition. Indeed, I fear some of the "under shepherds" are more intent on oil development than in rebuking the vices and follies of the community; otherwise, it seems to me, profanity would be a little less common; some sympathy would be shown to the brute creation; selfishness and swindling would at least feel ashamed of themselves. I heard of a promising young divine who was making a good impression among his auditors, one of whom made him a pres-

ent of a one-sixteenth interest in a well then going down. Oil was struck, and the gift was converted into twenty thousand dollars; whereupon the preacher retired on a competency. Let us hope that others will not thus be drawn aside by a glance at the hill Lucre.

The former proprietors in that part of Pennsylvania were largely descended from the Protestant part of the Irish population; and to this day retain many of the characteristics of their ancestors. As a rule, they are slow, steady, cautious, thrifty, and strong-willed. Nearly all have, on selling out, removed to Ohio or Western New-York, purchasing farms, and investing their surplus means in public securities. Many of them expect, after this whirlwind blows over, to regain possession of their farms at a tithe of what they pocketed from Eastern agents. The new-comers are a mixture from all parts of the country. California, Iowa, Kansas, Minnesota, and Missouri being represented with New-England, New-York, and Pennsylvania. Even Virginia, the Carolinas, Kentucky, and Tennessee have representative men there.

The Petrolians are nothing if not geological. Nearly every operator is ready to discourse learnedly on rocks, formations, strata, (in the singular number!) shales, sandstones, (comprising every thing from limestone to conglomerate.) As in nature, so in human nature—no two agree. A, after describing “a most remarkable phenomena,” is positive that the best wells are to be found on the east side of all runs and “criks.” B asks you to examine “that strata,” and concludes that prudent men should bore only on the *slopes*. C, an old gentleman, fussy and seedy-looking, avers that the country is of volcanic origin, and is ready to point out certain rents in the hill-tops, through which Vulcan and his helpers found passages for the smoke and cinders of their forges; whence the petroleum. It would be uncharitable to surmise that either of these *savans* had a personal object in view, in the sale or leasing of land; yet stranger things have happened in Petrolia. But of all original characters, the most amusing is the ancient ploughman, wood-chopper, or flat-boatman, metamorphosed into a millionaire and a scholar. “This is Sugar Crik,” observed one of these newly extemporized linguists, “and that is a contributory to Sugar Crik; and the symptoms of ile is very premonitory!” Others are in the habit of pointing out the great benefits certain to flow from the further “envelopment” of the country. It is clear that Dame Partington has given some valuable lessons in Western Pennsylvania; indeed, who knows but that her ladyship has “oil on the brain”?

Health is the rule, and sickness the exception, there, in spite of the many drawbacks. Few persons exhibit the lean forms and sallow complexions so common in other parts of the country. On the contrary, as the men have a look of boldness and vigorous purpose, so they present the appearance of physical robustness in an unusual degree. This may be traceable, in part, to the circumstance that the hardships and privations felt there *drive away* the more feeble in mind, body, or purpose, who are thus strained out of the community. But there is more than this. The rough, wholesome, open-air exercise connected with this new life, the fresh mountain air, the fresh water pouring forth from a thousand springs, have built up the physique of hundreds of young men who previously languished behind desks and counters in the cities; have given them buoyancy of spirit as well as strength of limb, such as they never before enjoyed. The diseases to which strangers are said to be liable are principally connected with the digestive system, as diarrhoea, dysentery, etc.; but it is questionable whether these are traceable to the water so much as to exposure and over-exertion, especially working up to the knees in water, and remaining in damp clothes.

Of preparations for farming or gardening operations, this spring, there are none. Speculation has become so rife that it extends to the uplands, which are accounted "too valuable" (such is the slang) for agricultural purposes. The little supply of milk that reaches the valleys, and nearly all the vegetables, equally with the supplies of meat and grain, come from great distances. The author believes that the best paying wells this year may be struck within eighteen inches of the surface, by drilling with a plough, reaming with a hoe, tubing with garden-seeds, and pumping with manure.

"*Olei sacra fames!*" The insane desire of oil *is* demoralizing. It leads to every imaginable kind of misrepresentation and cheating. In every transaction involving profit and loss, falsehood is expected, is looked upon as the rule, truth as the exception. This indifference to veracity and honor does not merely extend to matters connected with the oil-wells, but to those of every-day life—to engagements entered into by landlord and tenant, by mechanics, laborers, etc., whenever a slight advantage may arise by violating them. This "covenant-breaking," where no other obligation than a man's word exists, forms a topic of general complaint in Petrolia; and at this moment, it is not too much to say that no one expects his neighbor to certainly fulfil[l] the conditions of a merely verbal contract.

## [Oil City]

Early oil region towns were not especially handsome and Oil City was seemingly one of the worst. Many writers told of their reaction to Oil City, but none was as expressive as J. H. A. Bone, who was a reporter for the Cleveland *Herald*. The opinion of Oil City is taken from his book *Petroleum and Petroleum Wells* (Philadelphia, 1865), pages 80-82.

Oil City at last. Oil City, with its one long, crooked and bottomless street. Oil City, with its dirty houses, greasy plank sidewalks, and fathomless mud. Oil City, where horsemen ford the street in from four to five feet of liquid filth, and where the inhabitants wear knee-boots as part of in-door equipment. Oil City, which will give the dirtiest place in the world three feet advantage, and then beat it in depth of mud. Oil City, where weary travellers think themselves blest if they can secure their claim to six feet of floor for the night, and where the most favored individual accepts with grateful joy the offer of half a bed and the twentieth interest in a bed-room.

Oil City is worthy of its name. The air reeks with oil. The mud is oily. The rocks hugged by the narrow street, perspire oil. The water shines with the rainbow hues of oil. Oil-boats, loaded with oil, throng the oily stream, and oily men with oily hands fasten oily ropes around oily snubbing-posts. Oily derricks stand among the houses, and the "town-pump," if there is such an institution, must pump oil.

\* \* \* \* \*

The growth of Oil City is something remarkable. Until the commencement of oil mining on the Creek, there was nothing at the junction of Oil Creek and the Alleghany but a small store and a tavern or two, frequented by the raftsmen who brought their rafts into the eddy and rested awhile. In 1861 a settlement was established at the mouth of the Creek, and several stores of various kinds put up. In the Spring of 1862, Oil City was incorporated as a borough. There are now nearly one hundred stores and work-shops of various kinds, to which additions are always making. Fourteen hotels, large and small, and half a dozen saloons, minister to the bodily comforts, whilst the spiritual wants are supplied by four churches. Healthy as Oil City is claimed to be, there has been found employment for eight doctors, who, however, frequently mingle oil speculations with their practice.





Oil prospectors did not all get rich. Here two despondent drillers offer their engine "For Sale Cheap."





John Benninghoff Farm, pictured in a famous Mather photograph. The line over the hill marks the first pipeline to carry oil over a hill. The house at far upper left was where John Benninghoff was robbed of an oil fortune. The well at the right corner was the first well in which 5 5/8-inch casing was used. Lightning struck this area and burned most of these wells one hour after Mather took this picture.



The famous Economite wells owned by the Harmony Society, bordering the Allegheny River across from Tidioute, 1861.

## Route to the Oil Regions, and Cost

This is a typical report of how to get to the Pennsylvania oil region. In this report the author has also included Ohio and West Virginia, which were gaining fame as producing states. This survey appeared in a pamphlet written by Franc B. Wilkie called *Petrolia; or the Oil Regions of the United States* (Chicago, 1865), pages 34-37.

Those going from Chicago will take the Michigan Southern road in the afternoon, and reach Cleveland the next morning. From thence a train, which connects closely, will leave on the Atlantic and Great Western for Meadville. This is but a short ride; and, after reaching Meadville, the traveler has abundant time to walk about the ancient Dutch city, or edify himself by listening to the oil talk, and watching the crowds that eddy and rush hither and thither in the rotunda of the McHenry house. At half-past three o'clock in the afternoon a freight train leaves for Franklin; but, although the distance is only twenty-five miles th[i]s journey occupies from three to four hours. From Franklin conveyances run, on the arrival of the trains, and at short intervals during the day, to Oil City, making the journey in two or three hours. Other conveyances run twice each day from Oil City to Shaver's [Shaffer's Farm] reaching that place (distant twelve miles) in any number of hours, depending upon the condition of the roads. At Shaver's is the terminus of the Oil Creek railroad, which runs one train per day each way. Eight miles above is Titusville, where Oil Creek forks, and one stops who wishes to visit the east and west branches of this oleaginous stream. From Titusville the cars run to Corry, a station on the Atlantic & Great Western road. Corry is reached about three o'clock in the afternoon, and, a little later, a train passes westward to Cleveland.

This journey takes one directly through the richest part of the oil region. The sight-seer will, when at Franklin, wish to visit the celebrated Hoover farm, three miles below the city, with its flowing well, and its dozen other wells all pumping oil; also, the Blacksmith's well in Franklin city, and the blacksmith himself, and, if possible, his daughter. The former is a bearish Vulcan, and, quite possibly, will put his brawny muscles to the task of throwing anybody through the window who is in anywise impertinent in his demeanor or observations.

At Oil City one will visit the various refineries, and, when he can get a horse, will find it worth his while to go up the right bank of the

Allegheny river to Pithole creek, in order to witness the workings of the flowing well on the Holmden farm.

If he have time, he will, in his journey up Oil Creek valley, stop one day at Roosville [Rouseville], a place situated at the junction of Oil creek and Cherry run, with a view of visiting the Reed wel[l] and other curiosities of the latter stream. A little higher is the Rynd farm and the mouth of Cherry Tree run, up which the visitor will do well to make a flying trip. There are thousands of other objects, such as the Egbert farm, with its flowing wells, which are worthy the examination of the traveler, and which will well repay him the extra hours necessary for their inspection.

In going from Chicago to West Virginia, one can go to Cincinnati, and thence to Marietta by taking the Marietta and Cincinnati railroad. The entire journey may be made in about twenty-eight hours railroading, with the addition of a necessary delay of one night at Cincinnati. To visit the Muskingum country, the traveler takes in the morning one of the little boats that ply on the Muskingum river, up which he will proceed as far as McConnellsville, whose salt works and oil wells will repay a visit. To examine the Duck creek, Little Muskingum, and Newell's run country, horses, or, if the roads permit, carriages are taken from Marietta. This route will reveal to one all that is remarkable in the Ohio oil region. A boat leaves Marietta every day for Parkersburg, which is reached in a few hours. From Parkersburg one goes by rail to Walker's or Petroleum station, on the Northwestern Virginia railroad, and from thence goes on horseback to the celebrated oil region of the Little Kanawha. At Petroleum will be found the wells of the higher branches of Goose creek. At this point the traveller may ride from Petroleum over to the rich country lying about Bull, Calf and Cow creeks, and after finishing his examination, proceed down the turnpike to Williamstown, opposite and just below Marietta.

The routes thus described will take the sight-seer through all the prominent points in Pennsylvania, Ohio, and West Virginia, within three weeks. Including livery hire, the expenses of one who goes simply to see the country will average about fifteen dollars per day. The following is the cost of railroad routes:

Chicago to Cleveland	\$11.00
Cleveland to Meadville	3.85

Meadville to Franklin	1.00
Franklin to Oil City	2.00
Oil City to Shaver's	3.00
Shaver's to Titusville	.35
Titusville to Corry	1.00
Corry to Cleveland	4.00
Chicago to Marietta	18.75
Marietta to McConnellsville	3.00
Marietta to Parkersburg	1.00
Parkersburg to Petroleum	2.00

The reader can easily add up the return fares, and thus learn the entire cost of the round trip to either of the oil regions.

A railroad is nearly completed from Franklin to Oil City, and will probably be in running order some time early during the present spring. One is also projected to run down from Shaver's and meet the other at Oil City, which, when completed, will make the journey through the oil regions of Pennsylvania much shorter and more endurable than it is at present.

## The Fire on Bennehoff Run

Fire was a constant challenge to all in the oil fields. Crowding of wells, fire from boilers, escaping gas, flowing gushers, and often-careless men all contributed to the easy possibilities of sudden and destructive flames. One great fire near Petroleum Center was especially well reported in the Titusville, Pa., *Morning Herald*, February 2, 1866.

### THE FIRE ON BENNEHOFF RUN. EIGHT WELLS BURNED.

Twelve Thousand Barrels of Oil  
Destroyed.

Loss Eighty Eight Thousand  
Dollars

We gave yesterday morning a brief telegraphic account of the destructive fire on Bennehoff Run: We sent a special reporter to Petroleum Center, on Wednesday night, who furnishes the following particulars of the disaster:



About 5 o'clock p. m., on Tuesday, while some carpenters were engaged in covering a tank full of oil at the Getty well on Bennehoff Run, sparks from the smoke stack were being driven by the wind directly over where they were working, and one of the men apprehensive of danger, went to notify the Superintendent of the fact, but he had not proceeded far before the oil ignited. The men on the top of the tank beat a hasty retreat and escaped without injury, and in a few minutes the tank burst and an immense sheet of flame and smoke shot up into the heavens. As the fiery stream rolled past, it attacked everything in its course, tank after tank burst, and all the inhabitants of the valley rushed to the hill side to prevent being swallowed up in a river of liquid fire. The stream continued to roll on until it reached within half a mile of Petroleum Center; here it came in contact with a large accumulation of ice and snow which stayed its progress. This however did not last long as the oil forced its way through the ice, but came out at the other side extinguished, and flowed on its course until it emptied into Oil Creek. The scene was now grand beyond description, for nearly a mile one vast sheet of flame shot heavenward and the dense black smoke covered the whole country with a black cloud. The sun was not setting and the reflection upon that cloud rendered it first of a deep purple, then of a red color, and the peculiar rolling motion produced an endless variety of shade till at last it became dark and black as before. The bright blaze of the fire made every object distinctly visible after dark, and the hill sides were at one time so hot that an individual was heard to remark that if the infernal regions were anything resembling it he never wished to visit them.

Groups of houseless and panic-stricken women and children were wending their way to Petroleum Centre, while gangs of men were at work with pick and shovel damming the creek at various points. The noise of the splitting rocks was like the constant roll of musketry, and as the burning fluid fell over the dam it produced a sharp crackling sound like the discharge of innumerable pistols. The flames at one time completely surrounded and played upon the large iron tank containing 2,800 barrels of oil belonging to the Ocean Company. Had this burst, the town of Petroleum Centre would that night have been laid in ashes. Good fortune, however, saved it. About 9 o'clock the fire had spent itself, and the oil not consumed was on its way to the Gulf of Mexico.



About 10 o'clock the various sufferers by the fire met at the Western Union Telegraph Company's office and made an estimate of their losses, which were as follows:

Getty well, No of barrels of oil destroyed, . . . . .	2,500
Harkins, . . . . .	2,000
Warren farm, lease 33, No. 1 and 2, . . . . .	3,500
Coddington . . . . .	1,000
O. N. Beach, . . . . .	600
Clark, . . . . .	1,950
	-----
Total, . . . . .	11,550
Oil destroyed, . . . . .	\$57,750
Destruction of tanks, derricks, engines, engine houses and derricks, . . . . .	30,000
	-----
Total, . . . . .	\$87,750

After sending various telegrams to the press, and those most interested, Mr. Harmon, the gentlemanly Vice-President of the Bennehoff Run Company, invited those present to partake of a champagne supper, where the history of the flowing wells on Bennehoff Run was freely discussed.

It appears that the gentlemen interested in the development of the territory were about to locate the wells, when they accidentally came across a professed Witch Hazel operator, and in order to test his power they requested him to locate the wells for them. After locating them with his eyes open, he was blindfolded and in this condition was led over the ground. The hazel twig dipped at precisely the same localities which it had done while his eyes were open. This circumstance struck the gentlemen as being so remarkable that the wells were all sunk in the localities thus indicated, and each and all of them have proved to be flowing wells.

The next morning the scene of conflagration was visited. Proceeding to the mouth of Bennehoff Run the marks of the oil were plainly visible on the banks of the run, and it may be imagined what an immense body of oil must have flowed through here, when we state that the depth from the marks to the level of the water was two feet, and the width from six to ten feet.

Wending our way up the run, the first remarkable object which indicated the action of the fire, was the tram railroad bridges, which were burned, and the rails warped by the action of heat. We then came to the large iron tank belonging to the Ocean Company, containing 2880 barrels of oil. All round this point the rocks were split and the action of the fire was distinctly visible on the outside of the tank, but the oil was safe. Further on we found the ruins of several shanties and derricks. Also on the side of the hill the rocks were laid bare and split by the heat.

We now come to the flowing wells where the fire originated. The oil was still burning at 10 o'clock, in little pools along the run, and large patches of wood work were still smouldering. Little groups of men with shovels were heaping earth over the oil as it dripped from the wells, which were plugged up as effectually as possible under the circumstances. There was one well, we believe, Lease No. 33, Well No. 2, which attracted the most attention; it defied all efforts at plugging, the gas and force of oil being so powerful that it carried everything before it. It was the general impression that all of these flowing wells have increased since the fire, and that very perceptibly. The circumstance is not without precedent, as well No. 19 on Holmden Farm, Pithole, increased to a very considerable extent after it was burned, and there have been various instances of the same phenomenon taking place with other wells under similar circumstances.

Yesterday morning at 10 o'clock, preparations were being made for replacing the tanks and some of the material was already on the ground. Most of the engines and boilers at these wells are rendered useless, but as they are flowing wells, the necessity for replacing them is not so immediate as that of building new tanks, which will, no doubt, be accomplished in a few days. The fire, instead of injuring the locality, may be the means of attracting attention to it, as one of the best producing territories in the region.

## Means of Transportation

Transportation was of the greatest importance in the early oil days. Oil Creek and the Allegheny River served boats of all descriptions. The following survey by Rev. S. J. M. Eaton, who was pastor of Franklin's Presbyterian Church, describes six types of crafts used in moving crude oil by water. And his description of the famous "pond freshet" on Oil Creek is the best we have of this unusual event. The report appears in Eaton's book *Petroleum: A History of the Oil Region of Venango County, Pennsylvania* (Philadelphia, 1866), pages 160-167.

When the business began to develop, the Allegheny river was the only way of conveying the product to market. The distance to Pittsburgh is about one hundred and forty miles. Much of the oil was refined there, but still more was shipped to Philadelphia, New York, and other points. In times of high water steamboats run up to Oil City, and at the same time other species of craft run down. Transportation by the river is perhaps the cheapest of all modes of reaching the market; but in this fast age is a little slow. The steamboats used are of the kind usually termed stern wheels, that is propelled by a single wheel which is rigged at the stern of the vessel. The petroleum is stored in the hold and on the lower deck. Some of these boats carry five hundred barrels. The cost of transportation varies according to the number of boats running and the demand for carriage; as in the oil region men are not usually slow in taking advantage of circumstances. The price ranges from forty cents to one dollar per barrel.

Another mode of transportation is by loading the oil upon rude flat boats, resembling coal boats, or the old "broad horns" of the early settlers, and towing them down the river with a steam-tug. Sometimes these flats are loaded with bituminous coal, far down the Allegheny and towed up; thus realizing a profit both on the upward and return voyage, as the same flat answers for both purposes. These tugs are a very slow but powerful species of craft, small in outline but propelled by powerful engines, that in their own peculiar way enable them to perform good service in this kind of business. One of these tugs will sometimes convey to market three thousand barrels of oil.

The flat-boats have always been an institution on this river and were not slow to avail themselves of the new business that has fallen in their way. They are often towed by horses up the current, and allowed to float down with the current. Horses are attached by very

long lines, and sometimes walk on the shore, and at other times in the stream itself. Whenever the water is deep, and it is desirable to change the motive power to the opposite side of the stream, the horses are taken on board and transported to the other side. Sometimes these flat-boats are pushed up the stream by the boatmen themselves; or, as they term it, "make progress moving backwards." The boatman with a long pole set in the bottom of the stream, and with the other end braced firmly against his shoulder, commences at the bow of the boat and walks slowly towards the stern, pushing as he goes. He then walks back and repeats the operation. Several men being engaged in this work, on each side of the boat, the unwieldy craft moves slowly and regularly forward.

There is another species of craft that is pressed into the service, which is more primitive in its construction. It is formed of two gunnels hewn or sawed from a log, with the ends cut so as to turn upwards like sled-runners. These are connected together by scantling and a bottom spiked on. Studding is then set up along the sides or gunnels, and rough boards spiked to these, and after being rudely caulked the boat is ready for use. Oil barrels are rolled in, when the crew set out on the voyage, floating with the current, but under the charge of a competent pilot, who is supposed to be familiar with the channel to Pittsburgh, as well as every rock, and bend, and eddy throughout the whole course of the river. During moonlight nights these craft "run all night;" but when it is dark and the weather stormy they generally "tie up" at some well known eddy, and wait until morning. These craft do not often find their way back, being converted to other uses, and sometimes broken up for the lumber they contain.

But the oil trade has given birth to some new and original inventions. These have grown out of the necessities of the case. Barrels are sometimes scarce, and latterly always high in price. The river is often too low for steamboats, and as something must take the place of these larger craft, some inventive genius suggested, and carried out the suggestion, of constructing what are called bulk boats. These are rude affairs, but answer a good purpose,[] They are made of two inch plank about sixteen feet square and from two to three feet in depth; divided internally by planks into bulk-heads of perhaps four feet square, to prevent any undue agitation of the contents by the motion of the boat. Sometimes these bulks are entirely decked over, so that the boatman walks upon the top to manage his boat. These boats some-

times have the oil pumped into them at the well, and are run to Pittsburgh without further expense than the cost of running them to market. When the oil is pumped from them they are broken up, and the material used for kindling wood, the process through which it has gone adapting it eminently for that purpose.

After this, there is a rude nondescript that surely was never dreamed of outside the oil region. It consists of a series of rough ladders constructed of tall saplings. These ladders are moored in the water, and between each pair of rounds is placed a barrel of oil, floating in the water, but kept in position by its hamper. A number of these ladders are lashed together, until the float contains several hundred barrels of oil. These unpromising fixtures, as well as the unwieldy bulks spoken of are often, during favorable weather, run to Pittsburgh with entire safety. To assist in this crazy kind of navigation the services of the old lumber pilots are called into requisition. Their training, in the days of lumbering and running pig metal, had rendered them thoroughly familiar with the river; but this trade had failed, and many of them were distressed that their occupation was gone. The advent of this new trade, then, was hailed with joy, as it afforded the opportunity of revisiting their old haunts again, and of facing the storm, and navigating their craft through the dangers once more.

A peculiar institution in connection with water navigation is the "pond freshets" in Oil creek. It has been quickened into life by the necessities of the business. The wells extend along the creek for a distance of fifteen miles from its mouth. The yield is enormous, and, as yet, land carriage is difficult and expensive. The valley is narrow, and the stream tortuous, and in many places the ground soft and yielding; added to this teams are obliged to cross and recross the stream continually. The creek itself is too small for navigation, except at occasional times during natural freshets. A railroad has been proposed down the valley from Titusville to Oil city, but the enterprise is of doubtful utility, as there are difficulties in the way that at present seem insuperable. The narrowness of the valley renders every available foot of land valuable for boring purposes, so that it would be difficult to locate a road that would not come in conflict with some individual's pet boring spot. The danger from fire would, however, be the chief difficulty in the way, as columns of gas are rising continually from the wells, which might at any time change this rich valley to a river of fire and death.



To compensate for all these difficulties a system of artificial navigation has been adopted. Before the advent of the oil business there was a considerable trade in lumber down Oil creek and its tributaries, and many saw mills were in operation that were driven by water-power. Most of these mills had fallen into disuse. Timber had become scarce, and there was no longer the same demand upon them. But the dams still remained, and were now pressed into a new service, of which their original builders never dreamed. Perhaps in all there are five or six of these dams, constructed with draws in the centre so that they can easily be opened at the proper time. By means of these dams, the water is collected and retained, so that "pond freshets" are arranged about two days in the week. The day and the hour are arranged beforehand for these artificial floods, and the oil men have every thing in readiness. At the appointed hour the upper dams are opened, and then as the flood pours down others below them give way adding to the volume, until the miniature tide has increased to a river. At each landing it receives its tribute of boats, until as the fleet approaches the mouth of the creek it numbers often times over two hundred boats, bearing with them from eight to ten thousand barrels of petroleum.

The advent of this fleet of oil boats at the mouth of the river is in the highest degree spirited and exciting. As boat after boat rushes into the river, there is the dashing to and fro of the boatmen, rapidly handling their sweeps, to avoid running ashore on the one hand, and against the piers of the bridge on the other. Sometimes the danger is from Scylla, and sometimes from Charybdis, and sometimes it is received from both in quick succession. Men are shouting their orders on board the boats, and multitudes, who have collected on shore as spectators, shout their applause in all directions until the excitement becomes intense.

Here and there a collision occurs, that often results in the crushing of the feeble boat and the indiscriminate mingling of boatmen, fragments of the broken craft, oil and the fixtures of the boat in one common ruin.

"Apparent rari nantes in gurgite vasto;  
Arma virium [virum], tabulaeque et Troia gaza per undas.\*

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\* Virgil, "The Aeneid," lines 118 and 119. C. Day Lewis renders the quotation as

A man or two can be seen swimming the huge maelstrom,  
With weapons and planks and Trojan treasure spilt on the sea.

Lewis, *The Aeneid of Virgil* (London, 1954), p. 14.

A heavy oak barge running into a frail bulk constructed of pine planks, will pierce it as though its walls were simple paper, or two such barges will often crush the feeble little flat between them as they would an eggshell, when the boatmen are forced to take an unwilling bath in the water, and sometimes in the petroleum itself. Often two or three boats are thus wrecked and the contents lost at a single pond freshet, involving, of course, a serious loss, yet it is one of the risks of the business that must be placed as an offset to greater gains in other directions.

In this fleet the form and variety of boats beggars all description. Sometimes there is the orthodox flat-boat with iron-bound barrels, with a show of respectability around it, and disposed to put on airs like a well-dressed swell in the midst of a crowd of ragged loafers. Next will follow a rude scow, and close upon it an unwieldy bulk, into which the oil has been pumped at the well, and, perhaps, bringing up the rear an unmanageable ladder-float, although these latter have lately been ostracised from the creek from their disposition to inflict damage and shipwreck upon the more respectable class of boats.

This extemporized navigation is kept up and regulated by a kind of code of honor. Written laws and legal enactments have not yet learned of its existence. By a mutual understanding each oil producer along the creek pays a share of the expense in proportion to the amount of oil shipped. This is at the rate of about five cents per barrel. Before a pond freshet is to come off an agent visits the wells and collects this amount from those who propose availing themselves of its benefits, and in this way the labor and care necessary to keep the matter in order is compensated.

After the oil produced by this pond freshet reaches Oil city, it is in part shipped down the river to Pittsburgh, in a manner already described, and in part is sent in other directions. River navigation is tedious, and for shippers to New York, Philadelphia, Boston, or the West the route is a very circuitous one. Better facilities are therefore looked for. Besides a large portion of the year the river is not navigable. Sometimes in the winter it is ice-bound for months, while in summer it frequently becomes so low as to be fordable, when the smallest craft must be laid up from use.

## Transportation of Oil in Bulk

It was only a matter of time before a better method of transporting oil than in leaky wooden barrels would be found. The first improvement was two wooden tanks attached to a flat car, and this was followed by the iron tank car essentially as we know it today. Charles H. Harris, who often wrote under the name of "Off T. Goof," told of the volume and importance of this means of transport in his slim paper-bound booklet titled *History of the Venango Oil Regions* (Titusville, Pa., 1866). There were only two thousand copies issued and they sold out quickly at one dollar a copy. Today copies of this book are extremely rare.

Quite a revolution has taken place in the method of transporting petroleum between the oil regions and the New York, Philadelphia and Cleveland markets. Within the last year several companies have been organized, and are in operation, for the exclusive business of moving oil in bulk, that is, in tanks instead of barrels. These tanks are of various forms and mounted on the ordinary railroad flat car, and iron and wood are severally used in their construction. The Blue Tank Line gives the former the preference for its durability and non-liability to fire.

The daily shipments of the Oil Tank Company (more generally known as Yost's, or Blue Line,) exceed 2,000 barrels of crude, and require about fifty tanks daily. This one company has several hundred cars entirely devoted to this purpose. This line is under the superintendence of G. W. N. Yost, Esq., a pioneer in the petroleum business, whose generosity and nobility of character is as wide-spread as his extensive operations. Captain John L. Miller, of Miller Farm, is agent on Oil Creek, and E. McKenzie, Esq., in New York. Mr. Yost's purchases exceed any other one buyer in the oil regions. He is assisted by a staff of buyers of whom we may make honorable mention of E. J. Park, Major E. D. Luxton and J. H. Fulton, whose long experience and gentlemanly deportment amply fit them for this vocation.

The Red Line, another tank company, is owned by Snow, Buck & Co., of New York, who are ably represented by Messrs. Smith & Coutant, of Titusville.

The Empire Tank Company is connected with the transportation company of the same name, and is too well known to need more than passing notice. We believe we are correct in stating that upwards of 1,000 tank cars are employed in this business. The round trip

is generally made in about ten days, and the enormous quantities thus transported have a marked effect upon the transportation business.

## Fearful Riot at Petroleum Centre!

The lawless towns of the early West were no worse than the greasy and grimy boom towns along Oil Creek during the early days of oil. At some places the law-abiding population was driven away and the towns became dominated by the degenerates. Soon, these people began to fight among themselves with spectacular results. This report of a riotous night at wicked Petroleum Centre was in the Titusville, Pa., *Morning Herald*, August 1, 1866.

### FEARFUL RIOT AT PETROLEUM CENTRE!

#### A RAID ON THE BAGNIOS!

#### TWO OF THE RIOTERS SHOT!

Houses Demolished, Women Stripped and Stampeded!

\$3000 Worth of Furniture Carried off by the Mob!

A disgraceful and destructive riot occurred at Petroleum Centre, on Monday night, resulting in the wounding of two men, complete demolition of one house, the cleaning out of another, and the loss of thousands of dollars' worth of property by indiscriminate pillage.

Our reporter visited the place yesterday morning, and obtained the full particulars of the affair. It appears that about 10 1-2 o'clock Monday night a gang of bullies and bruisers collected in front of the house of Madame Wood, an establishment on Washington street, where the "pretty waiter girls" of the Free-and-Easys are lodged and boarded. The ball was opened with a discharge of vulgar and profane expletives, which were quickly followed by a volley of stones, thrown at the windows and doors. This lasted about ten minutes, when a missile thrown through one of the windows struck a lamp, which fell to the floor and set the interior in a blaze.

The crowd then rushed forward and burst open the door, entered the house and drove out the inmates. No further offensive demonstrations were made, the crowd appearing satisfied with their work. The house was little injured. It is the property of a respectable widow lady named Hartman, and was leased to the occupants under supposition

that they were respectable people, and designed to keep a private boarding house.

After retiring from the premises, the mob as if by a common impulse, or by preconcerted arrangement, made their way to the residence of Miss Lucy Hart, also on Washington street. It was a handsome, conspicuous dwelling, two stories in height, and twenty feet front by fifty feet deep. It was newly and luxuriously furnished, for a house of the kind, the proprietress having paid \$3,000 for the outfit before "opening shop."

On reaching their destination, several of the mob demanded that everybody should leave the house. The woman was called to the door and asked how much time she required to get ready to leave town. She replied twenty-four hours. After some consultation among the leaders, there seemed to be a disposition to retire, when some party in the house, (supposed to be the bartender) discharged a pistol at the crowd from one of the windows. Shots were also fired from the second story by parties unknown, but as the women asserted yesterday by two men named Mike Moran and Jerry Sullivan, who had entered by the back door while the crowd were in front.

Two men in the crowd were wounded by the shots—James Leonard receiving a bullet in his right arm and Peter Cosgrove a similar token in his right thigh. The wounded men were removed to a drug store for surgical treatment, and the crowd greatly exasperated stormed the building *en masse*. The windows and doors were shattered in every part of the house, and the raiders entered at every aperture in front, flank and rear.

Once within the walls the rioters proceeded to commit every imaginable extravagance. Some of them rushed up stairs and commenced to ransack and pillage. Trunks and closets were broken open and their contents thrown about the floor, or stuffed into sacks and pillow-cases and carried off. If the building had been on fire, and the multitude were intent on emptying it in the quickest time on record, they could not have evinced greater energy and determination.

One spectator counted seven hair sofas which were taken or thrown out of the house and instantly carried off. Four or five marble-topped tables were thrown out of the windows. Trunks, Brussels carpets, mattresses, bed-clothes, chairs, and every species of furniture and crockery shared the same fate. There were a dozen casks of lager beer in the house, which were carried away by the crowd. The rioters walked off deliberately with their plunder in every direction, and



seemed to enjoy the havoc and depredations as the most innocent of pastimes. Wanton destruction and pillage seemed to be the main object of the demonstration. The partitions were all demolished. Some of the women were stripped of their clothing and brutally outraged. There were six in the house, and after their escape they sought shelter in every direction. Whenever they were found by the rioters the house was threatened, and they were compelled to seek other hiding places. Our reporter found three of them in a negro shanty, who informed him that they stayed all night in a stable, the hotels having refused to accommodate them for fear of being mobbed.

Many of the rioters became intoxicated and paraded the streets in the women's clothing stolen from the house. Scarcely anything of value, excepting stair-carpets, was left in the house. It was the property of Einstein Addler. He had given the occupants notice to quit, but had been unable to eject them.

Lucy Hart, the proprietress of the establishment, is a resident of Washington, D. C. where she maintains a similar institution on a much grander scale. She is reputed to be worth \$150,000, which was accumulated in this profession. Besides the loss of her household furniture on this occasion, her entire wardrobe and diamond jewelry shared the same calamity.

She started for Franklin yesterday morning, alleging that she had the names of the ring leaders, and several of the parties who stole her furniture, and she would bring them to time.

## The United States Petroleum Company

This company drilled the first discovery well at Pithole City, and was the energetic developer of that location. Charles C. Leonard, a newspaperman at Pithole, was something of a humorist and produced a small serio-comic book which he called *The History of Pithole* (Pithole, 1867), pages 7-9. The fact that the author was on the scene lends credence to the historical part of his book. Leonard also wrote under the pen name of "Crocus."

### THE UNITED STATES PETROLEUM COMPANY,

Was organized in the spring of 1864 by Frederick W. Jones, J. Nelson Tappan, (of New York city), James Faulkner, and I. N. Frazier, then connected with the Humboldt Refining Company, of Plumer. I. N. Frazier afterwards became Superintendent, and was considered one of the best oil operators in the country. From the date of this Company's organization commenced the growth and prosperity of Pithole, although it was not until the succeeding year that the city was built. Leases were at once purchased upon the Thomas and Walter Holmden farms, also upon the Blackmer, Luther Woods, McKinney, Haworth, Van Wyck, Tyrrell and Heckert farms, and wells were immediately started on each.

Too much credit cannot be rendered to the U. S. Petroleum Company for the energetic manner in which they proceeded to develop the apparently valueless lands upon the creek. Two or three wells had been sunk by other parties to the *third* sand, as in other localities, and when no oil was there found, it was deemed useless to go further. The officers of the U. S. Petroleum Company, however, from careful and shrewd observations, felt certain that there was a *fourth* sand, and that oil would there be found. Subsequent developments confirmed this belief. Had less energetic parties been engaged in testing and had the "Frazier" well proved a dry hole, Pithole City would never have been heard of, and the life and bustle of commercial activity since witnessed, would never have been seen in this vicinity.

The first well struck in Pithole Creek was the Frazier well, on lease No. 4, Thomas Holmden farm, which at this time was covered with a dense forest, with the exception of that portion of the farm where the city now stands, which was pasture land or meadow. That part of the farm along the creek that has since proved the most valuable, was then considered the poorest territory; and the Blackmer farm, from its location and basin-like appearance, was regarded by all

interested as the most promising locality and *the* spot where oil would be found, if anywhere. But oil in paying quantities has never been produced on this farm.

The Frazier well was located by Thomas H. Brown, with the aid of the mysterious twig of witch-hazel. A son of Thomas Holmden and William Lyons were the parties who put down the well, which commenced flowing about the 8th day of January, 1865, at the rate of 250 barrels per day. The production of the well gradually fell off, but upon drawing the rods again flowed at the rate of 900 barrels per day. The finding of oil here was a matter of much surprise, and great excitement followed, which was shared by the owner of the farm when he found he had a fortune almost within his grasp.

Plumer was then the general rendezvous or headquarters of "oilists," who would ride over each morning and back at night. The forest which covered the flats was filled with innumerable swarms of insects and gnats which mercilessly preyed upon the unlucky individual who failed to cover his face and hands with handkerchief and gloves.

Mr. George D. Davis, Jr., sold oil at this well in January, 1865, for \$8 per barrel. This is the largest price ever paid for oil on the creek. In comparison to the weather of later and muddier days, there was then sleighing for six consecutive weeks, and oil was hauled to Titusville on sleighs. The office of the U. S. Pet. Co. was originally at Plumer, but afterwards removed to this place. In all cases where leases were sold, the lessee was required to test the territory immediately or forfeit the lease. There were only three buildings in this vicinity at the time the Frazier well was struck: the Widow Lyons' house, a log structure now standing at the upper end of Holmden street, near the old machine shop of Leard & Wright; a plain and unpretentious frame building which stood about the centre of Holmden street, near the U. S. Hotel, until destroyed by fire last winter, and which was known as the Thomas Holmden House; and a building at the foot of Main street, occupied at that time by Walter Holmden.

At the time of writing, the following are the officers of the United States Petroleum Company:

Trustees:

J. Nelson Tappan,  
S. Q. Brown,  
A. A. Sumner,

Jno. Burchill,  
Chas. K. Randall,  
G. W. Smith,

President:

J. Nelson Tappan.

Vice-President:

Jno. Burchill.

Treasurer:

A. Somarindyck.

Secretary:

P. G. Fenning.

Cashier:

Robt. Leckey.

## Human Nature as Developed in the Oil Regions

The original residents of the oil regions, plus the strangers who rushed to northwestern Pennsylvania seeking wealth from petroleum, made money, lost money, and broke even. Some did all three at different times. Sudden wealth caused a variety of reactions.

An oil producer himself, Samuel P. Irvin took a careful look at the producing business and wrote a booklet about it. His examination of human nature following the oil excitement is told in *The Oil Bubble* (Franklin, Pa., 1868), pages 59-65.

The animal, man, is by nature, both as regards his physical and mental organization, the most wonderful and mysterious of all God's creatures; and there is probably no other study in which he can be engaged more interesting and profitable than the study of his own nature. The poet might well say that "The proper study of mankind is man," or Job exclaim, after he had exhausted all the powers of his great mind in vainly attempting to become acquainted with himself, that man is "fearfully and wonderfully made."

It is only by observing the actions of men that we are enabled to arrive at any accurate conclusions concerning their motives; and even then we may be deceived, for the outward exhibition may be intended to conceal the real motive or design which prompts it. An individual who is reserved in his habits, or, as it were, retired from business and the bustle of the world, no matter what may be his disposition, what-

ever the power of his intellect, or whatever the depth of his degradation, he is but imperfectly understood by the rest of his fellow-creatures; and if he did not act in any capacity, or if his actions were concealed from the public, he would be entirely unknown, further than his physical identity is concerned. Hence the more candid, free, open, and public a man is in his deportment and dealings with his fellow-men, the better he will be known and understood by them, and the more unlikely will he be to become a victim of the secret, cunning, and designing individual who never acts but in a state of concealment. Just so it is with communities or governments. While they remain in a state of inactivity or retirement, when they are free from all excitement, but little is known of them, and they make but slow progress in the march of civilization. It is only when men are excited and brought into active operation that we can see them in their true character.

Never, probably, was there a more favorable opportunity for becoming acquainted with human nature in all its phases, than that which presented itself in the oil region during the great excitement in the years 1864-5. I have already referred to some operations connected with the organization of the "Big Injun" and "Great Invisible" Oil Companies, which will give the reader some idea of the gigantic frauds perpetrated by the incorporators, agents, or superintendents, upon the stockholders.

But when we come to speak in general of the developments of human nature as they actually took place in this section, we might fill a volume and the half would not be told. The desire to make money was one of the prominent characteristics, but it was by no means the only animal propensity which predominated. Almost every faculty of the mind was stretched to its utmost capacity, and in some cases even beyond endurance, which resulted in insanity. The traits of character exhibited were as diversified as the faculties of the mind are numerous.

I might refer to many instances, for the purpose of sustaining this general proposition, and probably no one would afford a better illustration of the fact than my own folly while under the influence of the excitement. But, as I do not wish to be egotistical, I will content myself with a simple reference to a few of the more public and notorious characters, which will enable the reader to draw his own conclusions as to the rest. An old gentleman and his lady, who were the owners and had resided upon a small tract of land for a period



of about forty years, where it required all the energy and economy which they were capable of exercising, to raise enough provisions to keep soul and body together, were offered one hundred and fifty thousand dollars for their little farm. Through the influence of some of their friends, they were finally induced to accept the offer. The title-papers were executed, the money paid, and the old couple, by the terms of the sale, were required to give immediate possession of the premises to the purchaser. The old gentleman, having received all the money in "legal tenders," placed it in a small valise provided for the purpose, then laid it down upon a wooden lounge in one of the rooms of the log shanty which they had so long occupied, but were now about to vacate.

He quietly stretched himself at full length on the lounge, and rested his head on the *valise*, apparently exhausted, where he remained a part of the day and the entire night, giving neither sleep to his eyes nor slumber to his eyelids. On the following morning, the old lady, being unable longer to restrain her feelings, involuntarily burst into tears. In perfect agony she wrung her hands, tore her hair, and exclaimed, "Now, John, must we leave our dear old home, where we have spent so many happy days, and be thrown upon the cold charities of the world, with not even a house to shelter ourselves from the storm?" John tried to console her by referring to the contents of the *valise*; but she would not be comforted.

She insisted that he should revoke the sale and give back the money to the vile speculators, who she alleged had thus foully taken advantage of his ignorance. Regardless of all her entreaties, he held on to the money; and we have since been informed that he converted the "legal tenders" into government bonds, and that the old couple, by exercising a little economy, are living comfortably on the interest.

We have several other instances of immense fortunes falling into the laps of those who were entirely unworthy to receive them, and where they were neither beneficial to the possessor nor to the community at large. If, however, there was no other good to be derived from these examples, they at least afford a practical illustration of the depravity of human nature, which may prevent others from falling into the same vice. Of the almost innumerable host of cases to which we might refer, we will select two, which will be sufficient to show the opposite effect of suddenly acquired riches upon different individuals. At the commencement of the excitement, the individuals to whom I refer were in very limited circumstances, and in that situation would

probably have been useful members of society. The one was a young man, rather prepossessing in appearance, but of very limited acquirements intellectually, and very strong animal propensities. He became the owner of a very valuable tract of oil territory, and was at the time considered worth two millions of dollars. His income from the proceeds of said territory was not less than two thousand dollars per day. His liberality was unbounded; but his donations were generally made for the support of unworthy objects. His moral nature was smothered beneath the rubbish of the animal, and his money was freely expended for the gratification of his lustful passions. In the short space of two years his fortune was expended, and to-day he can truthfully claim that he has contributed more to the spread of vice and immorality than any other man in America.

The other, though illiterate, was possessed of an ordinary amount of common sense, but inordinately acquisitive and miserly in the extreme. In the vernacular of this region, he was what was termed a regular "*buckwheat*," and was probably never outside the limits of Venango county prior to the oil excitement. He had lived all his life from hand to mouth, and, consequently, his organ of acquisitiveness, naturally large, was enormously expanded. He would, no doubt, have remained in obscurity, secretly gratifying the cravings of his selfish nature, had it not been for the enterprise of others, who freely expended their money for the purpose of developing his farm, which proved to be first-class oil territory. In a few months he became a "millionaire," and, so far as real wealth is concerned, he can still compare notes with any oil-prince in the oil regions. One would suppose that this unusual "streak of luck" would have had the effect of increasing his liberality; but it had the directly opposite effect, for it only added fuel to the flame of avarice which was already kindled in his heart. Prior to this time he might have been induced to contribute something to the support of the church, a crumb of bread to the orphan child, or a shelter for the homeless widow; but now the church pleads in vain, and the widow and orphan are permitted to go hungry from his door. He clings to his treasure with as much tenacity as a horse-leech to a bloodvessel, always pleading for more, and, like *Oliver Twist*, is never satisfied. His greenbacks are just about as much benefit to him as so many brickbats. So wedded is he to his mass of rags that he will not even loan it to his neighbor and take the interest for his support. He locks it up in his safe and places a guard around it while he sleeps.

“Along the room the miser stalks,  
Looks back and trembles as he walks;  
Each lock, and every bolt, he tries,  
In every crack and corner pries,  
Then opes his chest, with treasure stored,  
And stands in rapture o’er his hoard.”

These two characters are simply the exponents of a general principle, and I refer to them because they were more prominent than most others. Not wishing in this connection to be personal, I will simply subjoin the following extract from the “Meadville Republican” of the 25th January, 1868:—

“THE GREAT ROBBERY.—The robbery of John Benninghoff, the oil millionaire, has been the great sensation of this region for the past week. It seems almost incredible that any man possessed of common sense should keep two hundred and ten thousand dollars in money in his house. This, however, was only the sum stolen; and it is stated authoritatively that this was less than half the amount in the house at the time. The whole sum nearly or quite reached half a million of dollars, kept in a secluded and insecure spot, offering the greatest temptation to thieves. It was well known, too, over the surrounding country, that Benninghoff kept his money in this manner; and the only wonder is that the thieves did not pay him a visit at an earlier day. We have yet to hear the first word of sympathy for the sufferer. The popular judgment is that he was served right. This is not the correct view in a moral sense, however. ‘Opportunity makes thieves;’ and like as not some of this rich man’s neighbors have been tempted by a desire for his hoarded wealth to rob him. The parties, according to the accounts, appeared to be familiar with the premises, knew the members of the family, and were acquainted with their habits. They were ‘at home,’ so to speak, as soon as they had tied all who were there, and, after taking what they found, helped themselves to a supper and awaited for some time the return of a son who had the key to a safe in which most of the money was deposited. Finally they fled, carrying off nearly a quarter of a million of dollars. Just as like as not, the robbers and the money did not go many miles from the vicinity.

“But we started out to point a moral in this robbery, rather than to indulge in conjecture as to who are the thieves. Here is a man who has hoarded nearly half a million dollars in his dwelling, while

all around him commendable business enterprises are languishing, churches are inadequately supported, schools are inferior, and little or nothing is doing to promote the moral and intellectual welfare of the community. Just see what great good this man might have accomplished with the money that was stolen, by founding an educational, religious, or charitable institution, that would have been an honor to his locality and an enduring monument to his generosity and thoughtfulness for his fellow-men. But we are assured that in matters of this kind his contributions were stinted, mere pittances in comparison with the great fortune that fell to his lot. Instead of tempting his neighbors to steal, he could have used his wealth for their elevation, and in some great enterprise might have bound them to him by the most endearing ties, deserved their sympathies and blessings, and not have missed the money, but rather have been the richer for the investment. But it is not unfrequently the case that unbounded wealth and unbounded meanness go hand in hand. This may not be literally true in the case referred to; but there is no large-heartedness where so much money is hoarded and so little in the neighborhood to indicate that much has been expended in noble enterprise.

"Furthermore, if this money had been kept in circulation, aiding enterprising and honest men in business pursuits, it would have yielded a handsome return to its possessor and given life to trade and industry. Just because men like Benninghoff hoard their money, the manufacturing and commercial enterprises of the county are embarrassed. Their wealth wisely used would give prosperity and activity to every branch of industry. Wealth has been showered upon them in great abundance, not to be tied up in a napkin, but for high and noble purposes; and if they refuse to recognize the higher obligations they owe to society, the public will not pity them when they are the victims of robbers. In a single night this man loses enough money to endow a college, to establish a bank, or to build several factories; and the world laughs him to scorn for his stupid folly and miserly selfishness."

We have here given a brief historical account of two *bubbles*, which spontaneously sprang into existence and suddenly exploded; and we might add that it would be well for the community if these were the only ones of the same kind.

The effects of these unhallowed and apparently unquenchable passions are visible in every section of the country where the excitement prevailed; and it is difficult to determine which has been productive of the greater amount of evil. The libertine who has no

appreciation of the value of money, spends it without stint for that which, instead of satiating the demands of his nature, only excites his passions and stultifies his intellect. But, while he is thus recklessly throwing away his means, at least a portion of it falls into the hands of persons who are really in need and will be benefited thereby. He also contributes liberally to the support of the church, the schools, and the indigent class.

The miser hoards up his thousands, while these institutions are languishing and fellow-humanity suffering around him. This spirit, too, accounts for the fact that, notwithstanding we have in this region greater natural facilities for manufacturing than in almost any other section of the State, there is nothing of that character in this locality. Ample means are being squandered in the manner I have mentioned, or lying in a latent state, where it can benefit no human being. If it was properly applied to the building, for instance, of rolling-mills, glass or woolen factories, it might as it were make the face of this oleaginous region blossom as the rose of Sharon, and thus render it a desirable place for the habitation of intelligent beings; but this spirit of selfishness places a check on every enterprise, cripples the energies of the laboring-classes, and reduces them to a state of lethargy which generates crime, thus holding out inducements to the common thief, the highwayman, and the incendiary.



## Method of Refining

Early refining methods were crude and those developed by the first refiners generally were wasteful. As better means of refining came into being, they were adopted as rapidly as possible. There are few complete or accurate descriptions of early oil refining methods.

One of the best is republished here for the first time. It originally appeared in Andrew Cone and Walter R. Johns' book *Petrolia* (New York, 1870), pages 575-579. Johns came to the oil country in 1861, and early in 1862 started the *Oil City Weekly Register*, the first paper specially devoted to petroleum. In the same year he joined with Andrew Cone, who was part owner of the *Venango Republican* and the *Oil City Times*, and they started collecting data for a book on the oil regions. The material was constantly kept up-to-date and was finally published in 1870; the full title was *Petrolia: A Brief History of the Pennsylvania Oil Regions*. The title was slightly misleading for the report covered 652 pages!

The process of refining Petroleum we will essay to describe in general terms, many minor improvements being constantly making in the different details, and even the general plan is varied or modified to suit the quality of oil under treatment. We are indebted for much of the following to Messrs. Hill & Thumm, proprietors of the Economy Oil works, Oil City, Pa., who are among our best practical refiners:

The first process in distillation is to pump the oil from the crude oil tanks into the stills. The stills range in capacity all the way from ten barrels to one thousand barrels each, in the different refineries. These stills are made of heavy boiler-plate iron, capable of withstanding a high degree of heat. The liquid, or oil, is then subjected to a degree of heat necessary to bring it up to the distillation point, which commences at 180 degrees, increasing as the distillation progresses, to 1,000 degrees Fahrenheit. From twenty-four to thirty-six hours are required to "run off" the charge or contents of a one-hundred-barrel still, after the fire is started in the furnaces under the still or retort. As the oil evaporates under such powerful heat, it passes from the retort into condensers attached to same,—these consisting generally of long iron tubes or pipes. The condensing pipes are immersed in a current of cold water, which causes the vapor to return to a liquid condition. On emerging from the tube, the separation of its products is made. The first product of distillation is gasoline, of seventy to seventy-two degrees, Beaumé. The second product is Benzine, which is 62° to 65°,

Beaumé. At this stage, the oil has a bluish white color, instead of its natural dark green.

From the condenser it next passes into a receiving tank, the oil in this stage being called "distillate." Out of this it is transferred, without any further change, into the "treating tank," or "agitator." This is of sufficient size to allow the mixing of the oil thoroughly with sulphuric acid (oil of vitriol). The quantity of acid used is usually from one to two per cent. This is poured in, and the whole mass stirred or agitated by means of iron paddles, or a blast of air in the bottom of the vessel, for about ten or fifteen minutes. The object of this process is to separate from the oil all foreign ingredients, such as tar, dirt, or other impurities that may have become mingled with it. These settle down on the concave bottom of the vessel by their own greater specific gravity, and are removed separately.

The oil is next washed with clean water, and agitated afresh for a period of fifteen or twenty minutes, this process being repeated several times, so as to remove from it every particle of the acid. After washing, it is treated with a solution of caustic soda, standing at 12 to 15 degrees Beaumé, in the proportion of one half to one per cent. The alkali gives the oil brilliancy, and removes every particle of acid that may have remained in it. Next, it is drawn off into the "bleachers" or "settling tubs," which are large shallow wooden tubs metallic lined. The liquid has now a whitish or bluish white color. Weighed by the hydrometer, this instrument is found to rest at the point marked forty-five to forty-seven degrees on the scale, sinking to the level of a higher figure in proportion to the lightness of the oil. It remains in the "bleacher" until the gaseous and lighter portions of the oil have evaporated to an extent that the oil will stand a fire test of 110 degrees and upward without igniting, when a lighted match is applied to it. From the settling tanks or bleachers, it is drawn off and barrelled. The barrels are made of the best white oak, the inside of the barrels being carefully coated with glue, or other suitable compounds, previous to being filled. This process is repeated each time the barrels are refilled, the old coat being removed by means of a jet of steam.

After distillation, as before stated, the second liquid that comes off is naphtha, or benzine, a very light, volatile, and inflammable substance, its hydrometrical test varying from sixty-five to seventy-five degrees. When the discharge coming from the condensers descends to sixty or sixty-two degrees, the benzine is cut off, and let run to oil. If cut off at sixty-five or seventy-five degrees, the oil will be of inferior

quality, inflammable, and insufficient to stand the fire test, being liable to explode. The standard now adopted for refined oil requires it to stand a fire-test of one hundred and ten degrees and upward; this being specified in all contracts.

The mode of determining the "fire tests" is by placing a small quantity of the oil taken from the "bleacher" in a metal cup. Heat is applied by means of the flame of a lamp beneath it. A thermometer is immersed in the oil, and from time to time a lighted match is applied to the oil. The point or degree marked upon the scale of the thermometer at which ignition takes place, is the "fire test." When the oil is too inflammable to come up to the standard stated, it is allowed to remain in the "bleacher" until further evaporation takes place, sufficient to bring it up to the requisite point. Oil that ignites below the specified standard is in danger of igniting when placed in a lamp, causing it to explode, since a certain portion of heat is communicated to it all through from the flame above. The point of ignition is between one hundred and ten and one hundred and twenty degrees Fahrenheit, in the best qualities of refined Petroleum. It may happen, however, that in consequence of its more rapid heating by some than by others, this standard will vary, the difference between the figures in testing the same sample running from one to five degrees. There are three grades of refined oil—"Prime White," "Standard White," and "Straw Color," such being their commercial classification. All these are required to stand a fire test of 110° and upward. The residuum from the condenser is tar, the average ratio of which to all others is estimated to be about one per cent. This substance is used for fuel, as a substitute for pitch, and a lubricating oil for heavy machinery is also made from it. The average per centage of refined obtained from crude Petroleum is about sixty-six to seventy per cent.

As before stated, the refining of Petroleum is a much cheaper process than the procuring of oil from coal. Distillation over carbonate of soda has been tried with success. Distillation by superheated steam is recommended by eminent authorities, and has been extensively practised. But the large majority of refiners use the process we have described, varying the same according to circumstances.

J. GEISNER [A. Gesner], the eminent chemist, says: "In refining Petroleum or coal oils, care should be taken that the acid used be wholly removed by the alkali or water washing; many samples of Petroleum are found to contain sulphuric acid in sufficient quantity to produce

a most disagreeable and dangerous sulphuric acid gas in burning. This has been noticed by physicians upon visiting patients in the country, where the oil is most used. The atmosphere of the sick room is very soon made poisonous by the gas evolved by the nightlamp. Sulphurous acid gas is very irritating to the lungs and mucous membrane. The presence of sulphuric acid in the oil may be detected by adding a solution of chloride of barium to the oil, when a white precipitate will fall if any acid be present.”\*

## George M. Mowbray

Edwin Drake had trouble selling his crude oil once it was available. On a trip to Pittsburgh he met George M. Mowbray, a representative for Schieffelin Brothers & Company, manufacturers and chemists, of New York City. Mowbray returned to Titusville with Drake, contracted for his petroleum, and remained an important factor in the oil business for eight years. He then became a manufacturer of nitro-glycerine and in 1874 wrote a definitive volume on that explosive entitled *Tri-Nitro-Glycerin*, which was published by D. VanNostrand Company. An article titled “Geo. M. Mowbray” in *The Petroleum Monthly*, February, 1871 (Vol. I, No. 4), pages 117-120, told the story.

The subject of the present sketch is well known in the Oil Regions. Born in England, 1815, he emigrated to the United States in 1851, and after a varied experience in California, New York, and North Carolina, visited the Oil Regions via Titusville in the winter of 1859-1860.

Whilst analyzing the cannel coals of the neighborhood of Pittsburgh, being quartered at the Scott House, Mr. Marker, the landlord, announced to him that Col. E. L. Drake, who had discovered petroleum or rock oil by boring, was a guest in the house, and proposed an introduction. Seated at the parlor table with a copy of Frank Leslie's Illustrated Magazine before him, a tall, keen-eyed gentleman was pointed out as the individual alluded to. Without waiting for an introduction, Mr. Mowbray walked up to Col. Drake, quietly remarking:

“You are a bold man, sir.”

“How's that?” was the quiet response of the colonel.

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\* Abraham Gesner and George Wellden Gesner, *A Practical Treatise on Coal, Petroleum, and Other Distilled Oils* (New York, 1865), p. 160. Cone and Johns' transcription differs slightly from this edition. [Editor's note.]



"You are a bold man," repeated Mr. Mowbray; "with a well throwing out petroleum by the barrel, capable of enriching fifty men, and revolutionizing the coal oil business of this city, you read your paper with a quiet indifference which amazes me, who see in your discovery that cannel coal mines must return to their old values, and coal oil refineries adapt themselves to refining your product," and thereupon followed a most interesting interchange of views.

The meeting of these two remarkable men is a most important epoch in the history of petroleum. Each was a representative man. Col. Drake, whose enterprise, and perseverance, and true New England hardihood, had even then, before the value of petroleum was known or suspected, acquired a reputation to be justly proud of, at once recognized a coalescing spirit in the frank, whole-souled Englishman who had accosted him in a manner so unique, and who so deftly touched a chord which could not fail to vibrate music to *his ears—petroleum.*

The Colonel was then on one of his many visits to the Iron City, and making strong efforts to introduce the oil which was accumulating in his tanks, and the market glutted—*ten barrels* had overstocked the market—and no prospect of better times ahead. His work of finding petroleum had been one of incomparable difficulty, it seemed, but here was one which promised to eclipse even that; and this to make people comprehend its value. Not being a practical chemist, he could not so well succeed in this last work as in the first.

Mr. Mowbray happily supplied that wherein the Colonel lacked. He was a chemist of thorough experience, highly educated, a perfect gentleman, and just the man of all others to take up the work so well begun by Drake, and help carry it forward to completion.

He read the Colonel at a glance. He knew the value of petroleum. His sturdy English education, and the lessons gleaned from extensive travel and mingling with the world, had given him the comprehensive mind and the shrewd business foresight and sagacity necessary to see at once the immense value of Drake's discovery.

Not until four o'clock in the morning did the strangely important council break up. Both gentlemen were great lovers of tobacco, and tradition tells of almost an entire box of choice Havanas which became a burnt-offering to science upon this occasion.

The weather at this time was so intensely cold that the route to the Oil Region via the Allegheny river was impassable; so the Colonel and Mr. Mowbray proceeded to Titusville via Cleveland, Erie, &c.



On the morning after reaching Titusville, a visit to the Drake well was of course the first object. Upon their return from the well the Colonel bitterly remarked:

"And now, with all the oil obtained—with our entire capital expended—here I am, straitened for the necessary means to introduce it, and the whole of the coal oil interest dead against me. I have distributed hundreds of barrels, travelled far and near, offering it for one-half the proceeds that may be realized, but have not obtained one cent returns."

Mr. Mowbray said: "If I had your oil in New York I would soon relieve you from this embarrassment."

The Colonel answered that he had three hundred barrels at the Union station on the Erie and Sunbury railroad, which he would send to New York immediately, and after some discussion as to amount of advances on account and future continued supply, a contract was entered into for receiving all the oil produced by the Colonel's wells for five years. And thereafter, and for some eight years following, Mr. Mowbray became identified with the oil interest, making advances through Messrs. Schieffelin Brothers & Co. of ten dollars per barrel. And subsequently for Messrs. Downer & Co., the Portland Kerosene Oil Company, the Luther Atwood Kerosene Oil Company, this business reached to advances at the rate of five thousand dollars per day.

Necessarily, to reimburse these advances, an amount of energy and perseverance under opposition from conflicting interest, and indefatigable "*drive*" were brought to bear, that eventually compelled the coal oil works to adapt their experience and stills to the refining of petroleum. Claims for allowances for water on the part of the consignees, which owing to the varied fortunes and frequent changes of proprietorship in the wells, could not be reclaimed by Mr. Mowbray, we believe interfered with his realizing a fair remuneration for his labor, and necessitated the employment of his time in pursuits more congenial to his life education as a chemist; but he is much respected by the old pioneers of the oil business, with whom all his transactions were characterized by a decision and promptitude that gave an impetus and vim to the "men at the well," and culminated in such a production of oil as fairly astonished and surprised the most sanguine operators.

Mr. Mowbray has since taken under his fostering care the introduction of another oily compound—nitro-glycerine, and, manikg [making] the Hoosac Tunnel his headquarters, manufactures and uses some ten

thousand pounds of this "concentration of force" every month, with a freedom, hitherto, from accident or casualty that distinctly indicates a future for this dreaded explosive as important in mining operations as petroleum has been found in lighting the villa of the merchant, the garret of the seamstress, and the shop of the mechanic.

Already, nitro-glycerine has reached from the Hoosac Tunnel to the reefs and rocks of the harbors of New York and Erie, and those who have missed their friend from his haunts in the Oil Region, feel a satisfaction that his active, genial and enterprising mind is busily employed in the van of modern improvements.

## Sketches in Oil

Magazines often sent a writer-artist combined team to the oil country and told them to report what they saw. One of the best teams was made up of Ralph Keeler, a writer, and his partner, Harry Fenn, an artist. They visited northwestern Pennsylvania early in 1871 and their interesting report appeared in the pictorial newspaper *Every Saturday*, April 1, 1871. Fenn's six excellent sketches are reproduced with the article.

In the dusk of a Sunday morning we stepped from our sleeping-car on the Allegheny Valley Railroad to a damp platform, by the side of which a pipe came directly out of the earth and terminated in a large flaring blaze of natural gas. On the station-house close by the letters which form the words "Oil City," were brought out by this unsteady light. There was, indeed, something in the air and in the aspect of everything around us to convey through all our senses the fact that we were in the dominions of Petroleum. About us was the greasy plain where the Allegheny and Oil Creek come together, and above us was a hill covered with wooden houses; and, in a word, we were in Oil City.

We climbed through mud knee-deep up to a hotel. The people whom we met at breakfast and afterward lounging about the office had a peculiar half-pioneer, half-prosperous look. They all had on their Sunday black, and an occasional diamond glittered upon a brawny hand or lighted up the unsettled state of an ill-fitting, much-starched shirt-bosom. There were, however, some honest faces among them, and they all seemed good-natured. Oil City used to be considered a sink of iniquity; it is now, like the whole oil region in the wet season, only a sink of mud. It carries its respectability so far as to impose a fine of ten dollars upon the wicked barber who shall open

his shop on the Sabbath. The result in our case was that the barber came to our rooms. It is claimed by the good people of Oil City that the stringent measures they have adopted have exiled vice entirely from their midst.

In the matter of names at least, the California mountain towns and camps can hardly match the oil regions. The tourist may visit, if he will, Stand-off City, Short-Stop, Red-Hot, Alamagoozleum, Tip-Top, Fagundus, Two-Thieves, Dead-Beat, Strychnine, Chance-Shot, Calaboosse-Run, Slippery-Rock, and Last-Chance. Some of these names, it need hardly be said, have not a virtuous sound. There are, of course, more good than bad people in the oil regions, and it is, no doubt, owing to the trials of their uncertain past and to the mud in which most of their present out-door lives are passed that some, even of the respectable folk of Petrolia, look like reformed rogues.

There are two railroads from Oil City to Franklin, now one of the great centres of the oil-producing region, but, it being Sunday, as I have said, no trains were running. Oil City was desolate enough in-doors and out-of-doors. It was a walk of seven miles to Franklin, but we resolved to undertake it. Leaving all our baggage except our umbrellas in charge of our obliging landlord, we set out. We crossed Oil Creek on a railroad bridge and followed the windings of the Allegheny. About a mile on our way we came upon our first oil well. A small engine close by the water's edge was puffing stolidly at a crank which moved a long wooden walking-beam. A high, truncated pyramid of timber, called a derrick, stood over the well itself, out of which came a solitary pipe. In this pipe was the pump worked by the walking-beam. The oil flows directly into a tank, whence it is shipped to market. This is all there is about pumping petroleum. One man can work almost any well. In a majority of instances the fuel for the engine is gas from the earth.

Other wells, working or abandoned, were scattered at intervals all along on both sides of the river. About half-way between Oil City and Franklin we came upon a little town and a very large dinner. Upon the hill back of the neat country hotel we saw a flowing well. It did not, like some we have read and heard of, produce three thousand barrels a day; but regularly every half-hour it began with a loud noise to flow, and continued for twenty minutes to spurt the precious, ill-smelling liquid into a tank. These flowing wells are not so common as they used to be, but they always have strange freaks of their own. Some of them pour a steady stream of gas and foam and oil from one

week's end to the other, while there is a well-authenticated instance of one which flowed six days of the week and rested on the Sabbath. It is said to have had a certain evangelical effect upon the more susceptible operators, and the philosophers, who showed that the cessation of pumping by other wells on the seventh day had some connection with the strict conduct of the "Sunday Well," were certainly doing greater service to science than to the religion of Petrolia.

We had scarcely left the last house of this wayside village behind us, when we were overtaken by a snow, hail, and rain storm combined. It blew down upon us from the hills above, and it blew up at us from the river beneath. It blew into our faces and on to our backs, and settled finally into a constant, malignant rain,—rain with a memory of the deluge in it and some of the old hatred of sinners. We thought of our Sunday-school books, and wondered why we had not known beforehand that something of the kind would happen to us, if we started for Franklin on the Sabbath. It was, however, too late now to do anything but trudge on as fast as we could. Our plight during the last three miles of that seven-mile walk may have presented, as [in Plate I], what our artist would call "a fine bit of effect," but still we would neither of us care to pose again in just such a way for another picture of the same kind.

At length reaching Franklin, and finding a hotel, we walked into the office, and the first thing we saw was,—not the sleepy, shoddy-looking clerk, or the long-bearded people there assembled,—but this announcement in large letters, "Gentlemen will please keep out of the office and off the counter"! Now our hearts were not set upon getting on that counter, but would we dare approach the fire and dry our soaked garments in the face of those black and yellow letters? We registered our names while the clerk was gazing meditatively out of the window. The first indication of the faintest interest he took in us was a very suspicious staring at our wet umbrellas and wetter garments. In the light of this stare, as I may say, we read just behind him and just in front of us, also in black and yellow letters, "Guests stopping here without baggage are requested to pay in advance." We meekly deposited our cotton umbrellas in the hands of the clerk, whose mistrust was rather increased than allayed by the action. When one of us asked him if he had anything in the shape of a coat which might be put on in place of a wet one, his suspicions reached a climax of which his indignant negative was but a feeble expression. At last we found ourselves seated in thin comfort by the fire in our room. Our atten-



tion, however, happened in some way to be called to the window over our door, and there, from another window of the same kind over the door of a room just across the narrow hall, our clerk was taking an observation of us from the top of a chair or table. We opened our door suddenly, and had the satisfaction of hearing him tumble backward to the floor of the opposite room.

Ready for supper, we went down the devious stairs and blundered into the barroom, where we were informed in additional black and yellow letters that "No liquor is sold to minors or habitual drunkards at this bar." In our disgust with the town of Franklin and every one in it, at that time, we might have taken this in its comprehensiveness for a virtual prohibition, a temperance proclamation, in a word, a quotation from the phraseology of their prohibitory law,—we might have made this mistake at that prejudiced moment, I say, if the room had not been so full of people who were taking everything "at this bar," except the warning. Having at length found the supper-room, we were met at the door by more black and yellow: "Procure meal-tickets at the office," said the letters.

Verily people in the oil regions are not conspicuous for confidence in one another, if this hotel is an example. We took it for an example, and, after supper, determined to go to bed, and start home on the very first train next morning. But just as we were examining the broken bolts on our doors and the impracticable fastenings of our windows, we were called upon by some of the respectable people of Franklin, and afterward by one or two pleasant strangers in their midst, and we were finally dissuaded from our hasty plan of retreat. Even our clerk after a remonstrance from our visitors, smiled trustfully upon us, and during the rest of our stay made us an exception to every one of his black and yellow rules.

[In Plates 2, 3] Mr. Fenn has given you a representation of one of the most picturesque scenes we saw in the oil regions; namely, that of the junction of French Creek and Allegheny River, as seen from Franklin. Point Hill is the high point of land at whose precipitous end the two streams meet; and on the same page you have a sketch of it as seen from French Creek. That hill is now the centre of oil-producing and of oil excitement about Franklin. A year ago the whole hill could have been bought for fifteen hundred dollars; to-day it could not be bought for half a million. The heavy or lubricating oil, which is the most valuable, is found only in the first sand or oil-bearing rock at the depth of two hundred and fifty or five hundred feet, according





[Plate 1] A Fine Bit of Effect,—Water and Oil.



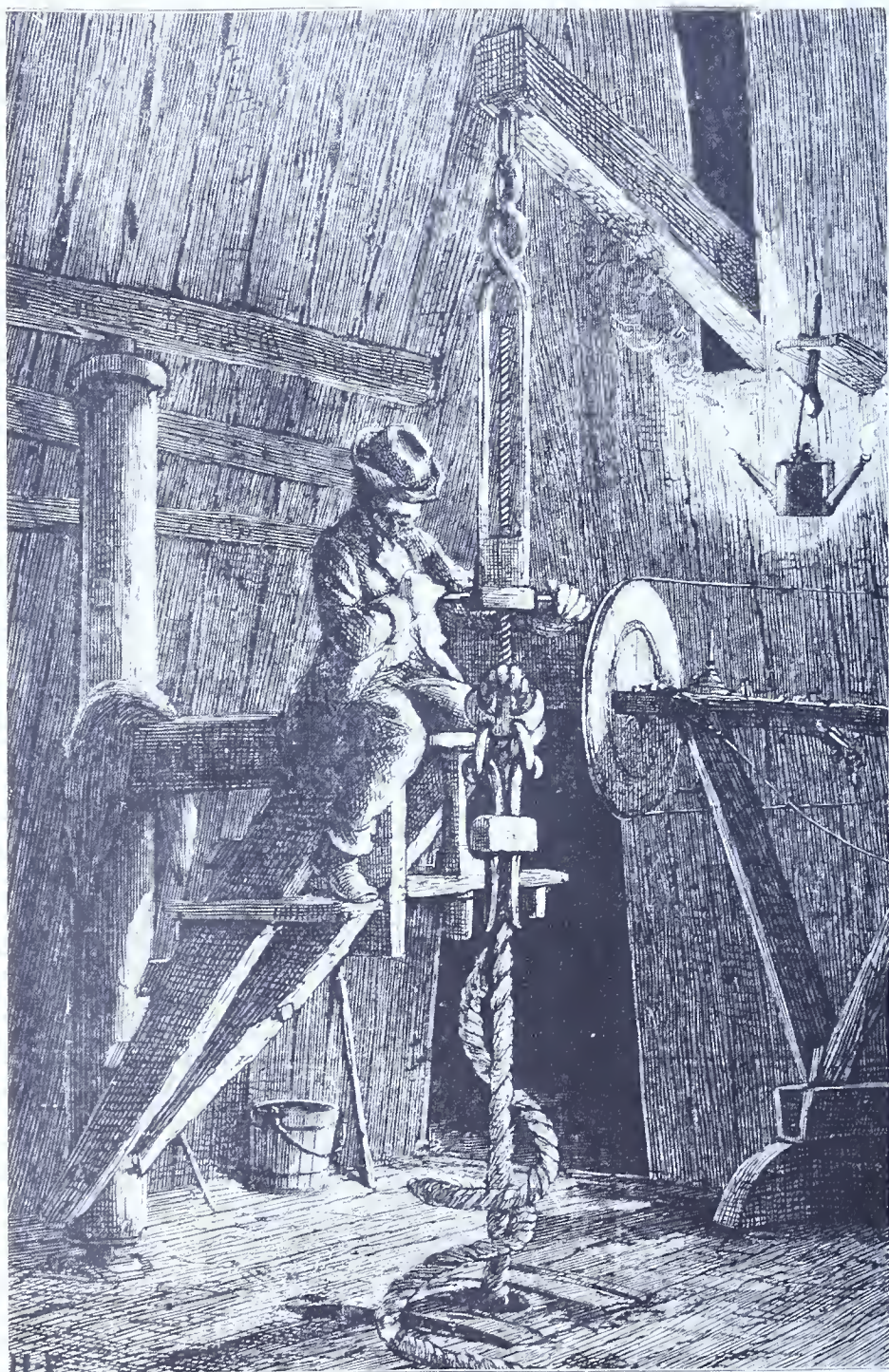
[Plate 2] Junction of French Creek & Alleghany R<sup>r</sup>





[Plate 3 | Point Hill from French Creek.





[Plate 4] Boring for Oil.

to the variation of the surface. In the second sand rock, which averages one hundred and fifty feet below the first, is found the medium oil used for refining. This is worth more than the light oil and less than the heavy or lubricating oil. The light oil which is used for illuminating is found in the third sand or oil-bearing rock, about one hundred and fifty feet below the second. Four, five, and even six sand rocks still deeper down are spoken of, but the greatest wells have been found in the third. The deeper the well, as has been seen, the lighter the oil. Franklin professes to be the centre of the region producing lubricating oil. Within the last two or three years only has the discovery been made that the hills yield the precious nuisance. Up to that time wells were sunk only in low lands by the streams, and often upon islands in the streams. It is thought by petroleum experts that water, getting into the holes of the wells by the rivers, has forced the oil back into the hills, and hence it is that most of the oil now comes from them. Stranded on the Franklin bank of the river is, as will be seen in Mr. Fenn's faithful picture, an old boat which is called "HOPE." An army of derricks has climbed the steep hill of the other side. Rarely, I think, has the history of a district been so oddly typified in a landscape.

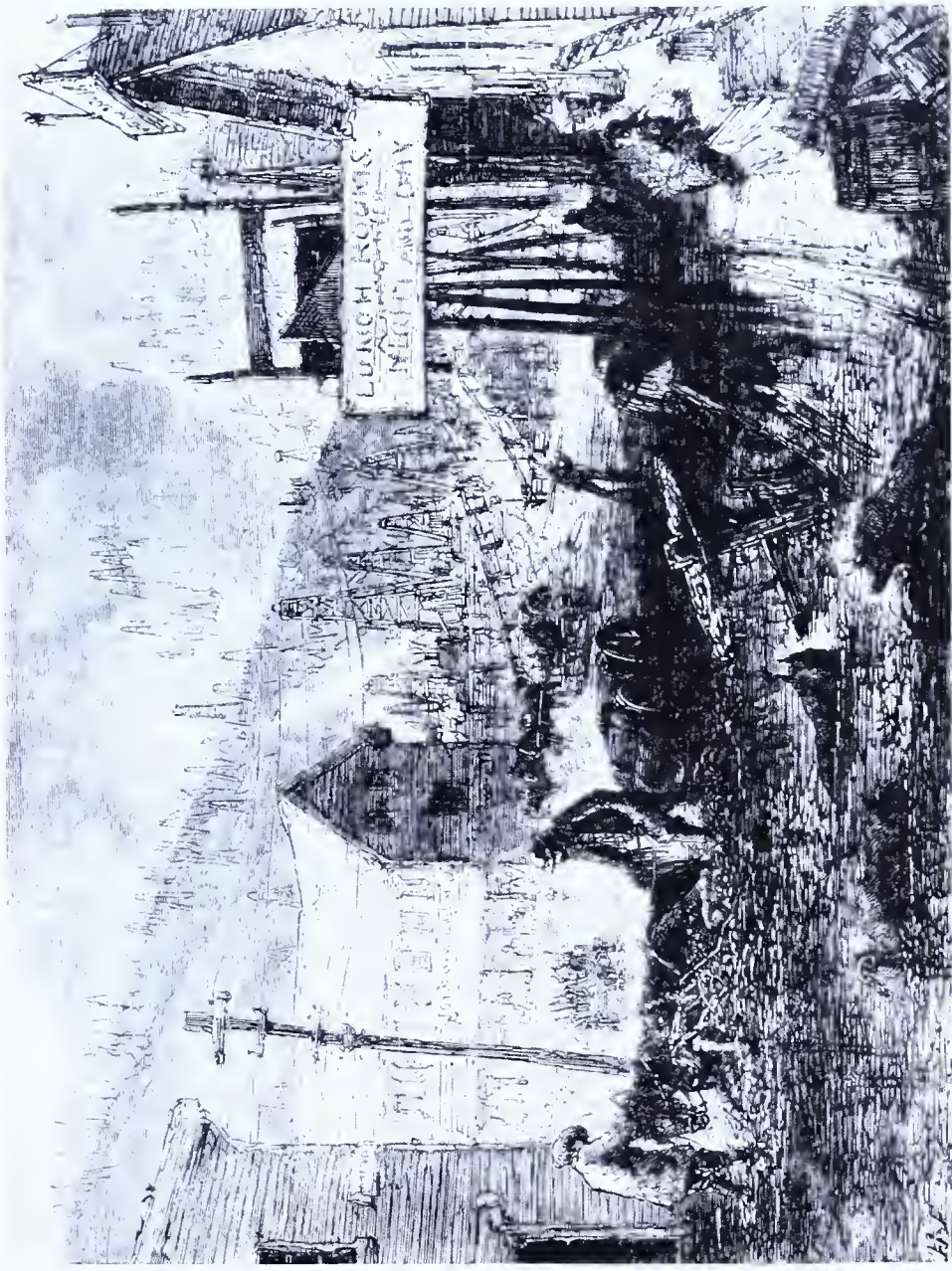
Boring for oil has now become almost a business by itself. One or more men, owning the engine and tools, bore the well for so much a foot or so much a day, as the contract may be. A sort of divining-rod called a witch-hazel has formerly been much used in the selection of the site for the well. The spirits also have been called upon for their advice on the subject; but now chance or certain geological indications or the proximity of other wells leads to the choice of the spot where the professional driller raises his derrick and begins operations. [Plate 4] is an engraving which represents the drill at work. The sketch was made at night, for the work goes on night and day till the well is proved a success or abandoned. Only two men are on watch at a time. One manages the drill, and the other runs the engine and sharpens the tools. The man at the drill, however, can stop or increase the speed of the engine by means of a rope, which he can reach from his seat where you see him in the picture. The boring is in reality a continuous pounding into the earth of a steel bit, and from one inch to ten feet a day are accomplished, according to the nature of the substance encountered. The experienced driller from his elevated seat feels the bumps of the hidden strata hundreds of feet below with his long iron and steel finger, and can tell you much about the order



of things down there, just where and how his tools are working. A sand pump is sent down after the water and sand and mud which he churns out of the subterranean rocks; and if he breaks one of his tools he has twenty others and a wondrous dexterity to draw it out, though it be lodged hundreds of feet below. Sometimes, however, a perverse bit of steel will foil all his attempts of many weeks to remove it; the labor of long days and nights must count for nothing to him or his employer, and the well is abandoned.

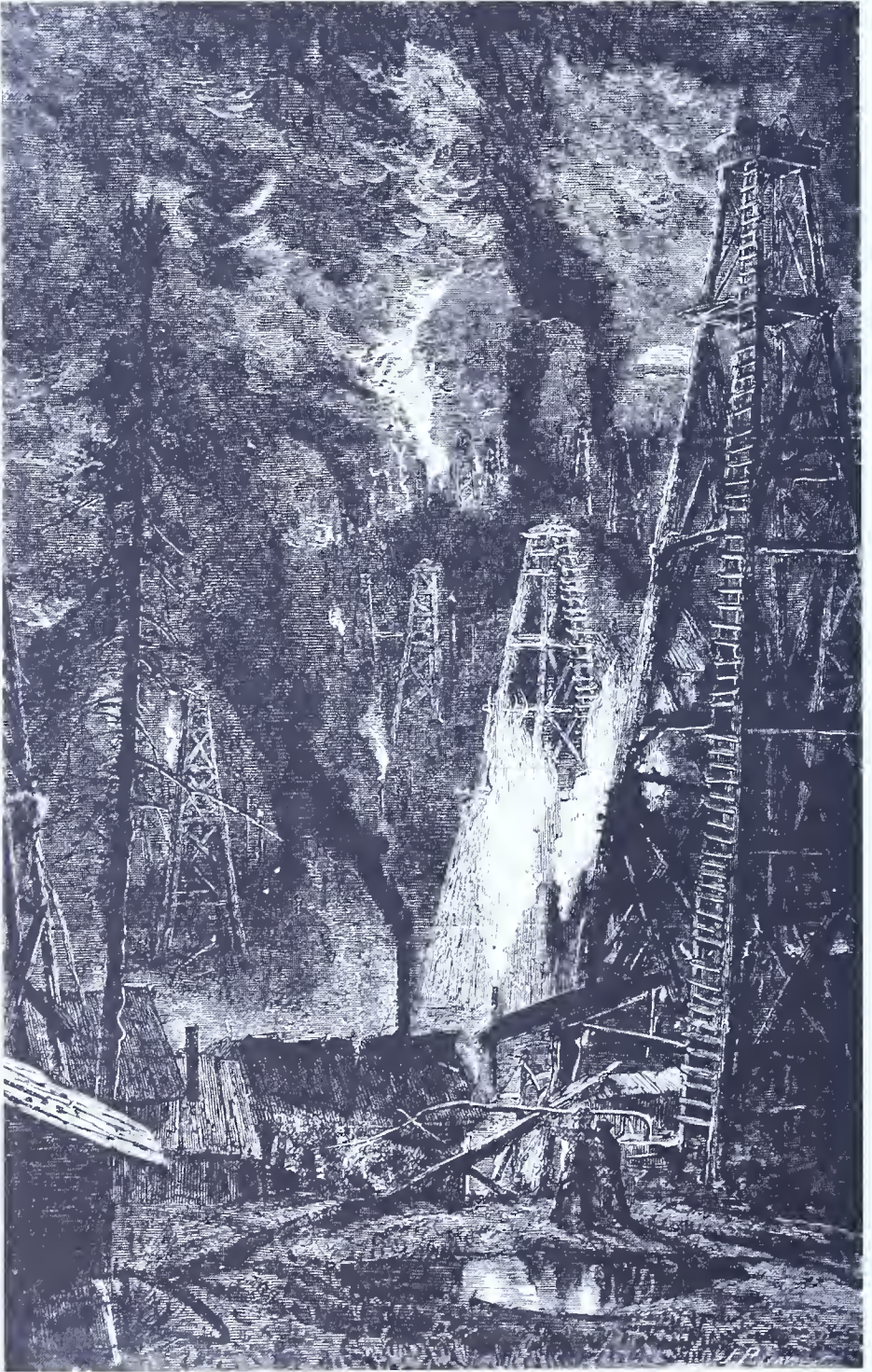
When he approaches the neighborhood of gas, the fire and lamp in the little house over him—whose interior Mr. Fenn has given you in the picture—are extinguished, and he continues his work in the cold and dark. But the oil, if he is to reach it at all, is then not far off. When the drilling is complete, the bore of the well is enlarged by what is called a “rimmer” or reamer; then an iron tube is inserted by sections of about fourteen feet in length, firmly screwed to one another as they go down; means are used to prevent the surface water from descending; a valved piston is introduced into the tube; the “sucker-rod” is attached to the “walking-beam”; the conduit pipes and tanks are put in readiness; the engine moves, and the liquid treasure gushes forth.

We left Franklin on an accommodation train for Petroleum Centre, stopping long enough at Oil City to get our baggage from the landlord with whom we had left it. The ride from the latter place to Petroleum Centre, along Oil Creek, was through a wilderness of derricks in all stages of decrepitude as well as of half-built newness. The creek was covered with oil, the air was full of oil; in the car, and out of it, we could see, hear, smell nothing but oil. Arrived at Petroleum Centre, mud divided our attention with oil. Here mud reaches, not its climax, but its anti-climax of depth. In Petroleum Centre, clay becomes artistic,—takes the plastic art into its own hands and goes to work in a sublime materialism to make men, houses, and streets over again after no model but its own. Within the last two or three years ten thousand dollars' worth of stone, enough to cover every street in the town to the thickness of four feet, has been swallowed bodily by the mud. Our artist has given us, [in Plate 5], a view of one of the principal streets just as it was, with its submerged wagons and its adventurous swine, swimming hither and thither, like the wrecked wealth in Virgil's vast whirlpool. We have called them, by way of euphemism, “The Hippopotami of Petroleum Centre.” It was not *very* muddy, we were assured, when we were there; but what is called,



[Plate 5] The Hippopotami of Petroleum Centre.





[Plate 6] Pipes of Burning Gas.

in the phraseology of the oil regions, "a swell operator from New York," in an attempt to cross one of the thoroughfares, fell into a lake, and when he got out there was nothing recognizable about him from head to foot.

Socially, Petroleum Centre presents all the aspects of a California mining town in flush times. A whole side of one of its longest streets is taken up entirely by a succession of free-and-easies and dance-houses; and life is said to stand on the usual short-call on which it proverbially stands in such places where revolvers and men are in the majority, and women are in the minority. The whole town, which is but six years old, is the property of a great oil company, and the kindly gentleman who manages its affairs and the town's showed by the best kind of verbal argument that Petroleum Centre is an orderly and well-behaved place. It is, after all, one of the best evidences of the inherent good in human nature that no man has ever, at least in the presence of a stranger, held the town or country in which he prospers as wholly bad, or even as bad as it is. I know of no one fact so aptly showing the fallacy of the assertion made by George Eliot, that there is really no gratitude in the world.

On the top of the steep hill back of Petroleum Centre is the celebrated McCraig Farm, where have occurred some of the most wonderful developments of natural gas that even the oil country has witnessed. Mr. McCraig and family are of the native class called throughout the whole region "Buckwheats." The term is a sort of verbal amber in which colloquial speech has fossilized the poverty of the earth and the squalor of its inhabitants before oil was discovered there. What single word could so well convey the fact that the soil was fit to produce nothing, and that the peoples' principal bread was nothing but buckwheat? The social position of the McCraigs is said to have changed very little since their farm has risen from the value of five dollars an acre to that of more than a million dollars for twenty acres. The family lives in the same house in which they ate the buckwheat of poverty; and the two boys instead of working on the farm, which now produces gas enough to light the city of New York, have the monopoly of the peanut and small-beer trade with the hundreds of workmen at the wells. Within the space of twenty acres on that hill, there are forty-six wells all bored and pumped by the gas which comes up out of the earth. They have produced three thousand barrels of oil a day. The gas is not so abundant now as it has been, but there is still much more than can be used in working the



engines. Two or three pipes have been laid to conduct the dangerous power away from each well. From every one of those pipes the gas has rushed up in a steady flame twenty feet in the air with a noise like that of a great steamboat blowing off steam. At night the whole hill presented the appearance of a volcano with a hundred separate craters burning into the sky at once. From one well alone there came gas enough to make steam for the engines of two pumping and three drilling wells, besides having three places for the gas to escape and burn in the air. [In Plate 6], we have a picture of these pipes of burning gas.

About seven miles below Franklin on the Allegheny River a well was bored which struck gas and nothing but gas. It caught fire from a little stove in the engine-room, and is said to have burned for months—some say a year—with a flame fifty feet high and twenty feet through. Thousands of people went to see it; a hotel was started in its vicinity. The grass was green about it all winter, and sleighing parties went to it from miles around and had their merry-makings and dances about it. It was down near the river at the bottom of a ravine, and in the spring was overflowed to the depth of five or six feet, but the fire came up through the water just the same. This wonderful well, though gradually decreasing in the power and volume of its gas, after the first twelve months, burned for over two years.

There seemed to be a great rage for “balls” throughout the whole oil region. We observed that a mask ball was announced in stencil lettering at Franklin. At Titusville, which was our next and last stopping-place in Petrolia, we learned that the butchers were about to have a ball. Titusville, though as muddy as a city of its size well could be, is the largest and best town that has grown out of the oil excitement. It is now, I believe, the acknowledged capital of the whole region, as it was the first centre of it. By the census it is made to contain about nine thousand inhabitants. It is settled down into steady growth, and is going largely into the refining business.

It was near Titusville that, in 1857 [1859], the first oil well was sunk by Edward [*sic*] L. Drake. Seneca Oil was the name petroleum wore when it was gathered from the surface of springs by means of blankets. Colonel Drake is said to have had his attention called to the substance, which may or may not hand his name down to posterity, first by his nose and then by observing its wonderful adaptability as a lubricator in a saw-mill where it was used. The Colonel is reported to have done almost every thing on the earth for an honest living before he went below the surface; for he had figured as Captain of a line packet on



the Erie Canal and of a steamer between Buffalo and Detroit; superintendent of machine works in Michigan; merchant at New Haven, and afterward at New York; express messenger between Albany and Boston; conductor and assistant superintendent for the New York and New Haven Railroad, and I know not what else. Like Sutter of California, he has added millions to the wealth of the world and is now hopelessly poor. Colonel Drake is represented to be an honest, good man, who has been unfortunate through fault of others rather than of himself. He has lately been stricken with paralysis, and, at his home somewhere in the State of New York, he has been kept from utter destitution by the very meagre subscriptions of people who are making millions where they would be planting buckwheat if it had not been for him.

Pit Hole has been, from first to last, one of the most remarkable developments of the oil region. That is where the great three thousand barrel flowing wells were found. Mr. J. H. Simonds of Franklin, one of the pioneers of the country, told us, that on the 30th of May, 1865, he rode through a dense forest over the ground covered by Pit Hole; and thirty days afterward he rode on to the same ground through the principal street of a city of ten thousand inhabitants, with eight hotels, two telegraph offices, a theatre, a daily newspaper, fifty free-and-easies,—forming altogether as big a den of vice as the world has ever seen. The wells there are abandoned, and Pit Hole now is a desolate wreck of shanties, with one Boston man there, like Macaulay's New Zealander, brooding over the perished London of oil.

The production of petroleum varies from ten to thirty thousand barrels every month. The whole region averages now over half a million barrels monthly. It is claimed in Pittsburgh that within the first five years of its existence as a branch of trade, oil added to the wealth of that city a sum not far from one hundred millions of dollars. No one can estimate the influence that petroleum has had or is yet to have upon the world. Bismarck and his parliament have had long debates about it. It has greased and lighted the whole earth, more or less. I remember myself to have spoiled the only pair of pantaloons I then owned by coming in contact with it on a little French steamer upon the Mediterranean. Its past history is as mysterious as its future history is uncertain. There are unmistakable indications in the Pennsylvania regions that the mound-builders had oil wells in the prehistoric times. One of the elements in the marvellous chemistry which has preserved the Egyptian mummy is petroleum. It is found in the

cement that held the walls of Babylon together. Through ages, with and without history, it has made its unsavory voyage round the world. The streets of Jerusalem, it is said, are now lighted by petroleum.

Leaving Titusville, we were soon landed at a station on one of the great railways, and transferred to a drawing-room coach. After a day in this elysium of upholstery the "expedition" disbanded into separate sleeping-cars, and each of us awoke the next morning at home. But instead of the quiet of a peaceful hearthstone, your present chronicler found awaiting him an artist, and another order to march. So, when these lines meet the reader's eye, their perpetrator will be two thousand miles away, accompanying in his humble capacity the clever and well-known gentleman who is, in the modest language of the conductors of *EVERY SATURDAY*, to illustrate "points of scenic and industrial interest in the United States, on a grander scale than has ever been undertaken by any pictorial newspaper."

## Petroleum Producers' Union

In 1870 and 1871, a large volume of Pennsylvania's crude oil constituted over-production, with some estimates claiming that one-third of all crude oil produced could be termed as excess. When railroads and pipelines could not move all the oil produced, warehouses and storage tanks were quickly filled; several times producers attempted to control production in the interest of stable markets, but they met with little success.

Unwilling to take a lesson from the troubles of the producers, by 1871 the refiners found themselves in a serious plight as their refining capacity was double the crude production figures. They had to bid against each other for oil to keep their plants operating, and yet the refined kerosene brought a disproportionately lower price as it flooded the markets. Few refineries operated at their full capacity and many lost money and closed.

Most concerned about the situation were the railroads and the largest refiners. A clandestine reorganization of an abandoned Pennsylvania corporation, the South Improvement Company, was effected January 18, 1872, when a secret contract and agreement was accepted by the chief officers of the New York Central, Erie, and Pennsylvania railroads, as well as by thirteen of the largest refiners from Cleveland, Pittsburgh, and New York. When the word had been secretly spread among the Cleveland refiners, twenty of the twenty-five independents in that city sold out to the Rockefeller group in less than six weeks.

The plot was revealed by accident on February 25, 1872, when an employee of the Jamestown & Franklin Division of the Lake Shore Railroad raised rail rates prematurely.

Some of the rates had been increased 240 per cent, and the oil regions were faced with ruin and the loss of huge investments. The producers banded together in ugly protest and by April, 1872, had defeated the combine.

In what has become a very rare pamphlet, the producers told their side of the entire story. The work was titled *A History of the Rise and Fall of the South Improvement Company* (Lancaster, Pa., 1872). The portion reproduced here, with omissions noted, comes from page 1 and 6-23.

### PRELIMINARY REPORT.

#### TO THE PETROLEUM PRODUCERS OF THE OIL REGIONS OF PENNSYLVANIA:

GENTLEMEN:—The President and Secretary of the Petroleum Producers' Union, respectfully submit the following report:

The Petroleum Producers' Union was created to meet a particular emergency and to accomplish a specific purpose.

That emergency was full of danger to your commercial interests, and the purpose of the Union was to remove the danger, and to defeat the infamous designs of the South Improvement Company.

No report of the officers of the Union and no proclamation is necessary to inform you of the signal victory achieved over that greatest and vilest of monopolies.

We have deemed it advisable to give a synopsis of the steps which led us to the formation of the Producers' Union, as well as its proceedings afterward, that they might be preserved for future use or reference.

We congratulate you upon the strength the United Producers have exhibited, and heartily commend your promptitude and willingness to sustain the hands of the Executive Committee in their endeavors to execute the trust and deserve the confidence you reposed in them.

We have the honor to be your obedient servants,

WILLIAM HASSON, President

W. S. McMULLAN, Secretary

A SYNOPSIS OF THE TREATMENT PRESCRIBED BY  
THE PRODUCERS OF PETROLEUM FOR PATIENTS  
AFFLICTED WITH A BELIEF THAT PRODUCERS  
COULD NOT TAKE CARE OF THEIR  
OWN AFFAIRS.

On February 20th, 1872, rumors were rife in business circles that the railroads having their main lines or feeders extending into the Oil Regions, had formed a joint arrangement to advance the freights on crude and Refined oils from the fields of production to the seaboard.

With a production of sixteen thousand barrels of oil per day, and the coming of spring—which always brings renewed energy to operation—and an already depressed market, this rumor created the greatest uneasiness in the minds of all operators and shippers. Nothing definite could be ascertained, and nothing further than the rumor could be heard, and the region settled back to fancied security.

In a few days, however, a second rumor was circulated that not the railroads, but a company bearing the wonderfully inappropriate cognomen of the "*South Improvement Company*," had purchased a right to all petroleum transportation, and were to arrange the rates of shipment of all the oil produced, and that an immediate advance of fifty per cent. was but the first advance, with promise of more in the future.

This, however, seemed so quixotic that it did not meet with general credence, until it was confirmed by telegrams on the 26th, from railroad officials to their agents at shipping points in the Oil Regions, advising them of the new rates, to take effect immediately. An advance of *one hundred per cent.* on all freight charges on crude and refined, was equivalent to a complete paralysis of all operation for and in oil in the entire region. But oil men are made of sterner stuff than to tamely submit to so gross an outrage, let it come from what quarter it would.

The thousands of operators were electrified with indignation, and rose as one man to defy and resist the levying of a tribute so palpably unjust. Meetings were called in all the principal towns and cities. The honor of calling and organizing the first meeting is conceded to Tidioute. E. E. Clapp was elected to the chair, and resolutions indicative of the spirit and determination of the producers of that field were passed. It was resolved, *inter alia*, to *shut down* all their wells until



the old rates were restored, or until a new outlet could be found to remove their oil to outside markets, if such a step were necessary.

Delegates were also chosen to attend a mass meeting, called to assemble at Titusville, on the evening of the 27th, "to consider the necessity of constructing a railroad from Erie, by the way of Titusville, into the Oil Regions, as a competing railroad, connecting with water communication to New York and Europe, and such other business of interest to the people as might come before the meeting."

The meeting at Titusville demonstrated the fact that the wealth, determination, spirit and practical ability of the men of the Oil Regions would render victory for them in the battle with monopoly an absolute certainty.

The wonderful resources of oil men, when pressed by great difficulties here became apparent in the plans and suggestions laid before the meeting. Railroad routes, with surveys and estimates of cost, to reach the lakes on the north, and railroads not in the combination on the south, pipe lines and other remedies, were suggested; and the feasibility of some, if not all, did much to re-assure the mass of people that they would speedily find a solution of the difficulty.

The following gentlemen were appointed by the chairman, E. E. Clapp, a committee on permanent organization:

Dr. Shamburg, of Shamburg; Lyman Stewart, of Titusville; B. D. Benson, of Enterprise; W. W. Hague, of Tidioute; W. S. McMullan, of McClintockville.

These reported for President of the permanent organization, Christopher Heydrick, Esq., of Franklin, and Wm. Brough, Esq., of Franklin, for Secretary.

A committee on resolutions reported the following, which we give as an expression of the feeling which pervaded all the meetings subsequently held:

WHEREAS, The prosperity of every branch of business, and the welfare of the people, depend to a great degree upon the freedom of commercial intercourse, and

WHEREAS, Recent developments have revealed the existence of a systematic and dangerous combination, which threatens to deprive the Oil Region of Pennsylvania of all the advantages flowing from a commerce unfettered by power and untainted by fraud;

*Resolved*, That we declare our hostility to every form of monopoly, every unholy conspiracy against the natural laws of trade, and every

selfish combination of capital and power to impose burdens upon this hitherto free and favored region.

*Resolved*, That we demand of our Legislature, now in Harrisburg assembled, the immediate enactment of such legislation as will relieve this section of the Commonwealth from a burden legislated upon us in defiance of law, equity, honor or patriotism.

*Resolved*, That we pledge ourselves each to the other that, throwing aside all preferences and political considerations, we will enforce this demand by the use of all such means as the exigencies of the case may justify.

[A complete list of the general committee selected has been eliminated in this reprinting.]

On the 28th the General Committee met and appointed sub-committees on Transportation, Legislation, Conference with Press, Pipe Lines, Arresting Drilling, etc., etc.

On March 1st, a second mass meeting convened at Oil City, and appointed a committee to arrange a plan for a permanent organization.

On the part of the producers: H. I. Beers, of McClintockville; Wm. Hasson[,] W. L. Lay, of Oil City; E. G. Patterson of Titusville; L. D. Rodgers, of Franklin.

On the part of the refiners: Wm. M. Irish, of McClintockville; J. D. Archbold, of Titusville; J. J. Vandergrift, of Oil City; H. H. Cummings, of Tidioute; A. P. Bennett, of Titusville.

A third mass meeting was held at Franklin, March 5th, and on the 6th the General Committee met at Oil City to receive the report of the committee on plan of organization.

The report being delayed, a second meeting was held on the seventh, to which the plan of organization was submitted, and by whom it was ratified, and a mass meeting called for the following day to take action upon the report of the General Committee, and especially the plan of permanent organization.

The meeting convened at the Academy of Music, in Oil City. It was composed of thinking men, who realized the deep importance of the questions to be submitted to their consideration. The very life of the region was in the hands of those in council. Former meetings had been denunciatory, defiant. Now, anxiety was mingled with quiet determination. A council of the ablest minds had for days been in session, to devise a definite plan of campaign against monopoly. The plan had been agreed upon in the council. Would it be received and acted upon by the people? Unity of purpose, and of action, were

first to be secured. Without these we were helpless. If the report of the General Committee, and their plan of organization were wise, and met the public approval, they would be accepted and would pledge every part of the Oil Region to harmonious movement in the battle with the enemy. Victory could but follow. If the people would not ratify the plan proposed, we became a mob without order, and without power. What wonder then that faces were grave, and voices were hushed, when the masses from all parts of the region filled the spacious hall in every part.

The President, with but a word of explanation, submitted the action of the council and the plan of organization.

On motion, the report of the committee was received.

The President said: "Gentlemen, what is your pleasure?" "Shall the plan of organization be adopted?"

A full minute of silent suspense followed. The very breathings of the audience could almost be heard. The painful silence was broken by the quiet "motion" "That the 'plan' be adopted." Duly seconded, the President announced, that remarks were in order. Another painful suspense followed, and was again broken by the stern demand "*question!*"

The President said: "Gentlemen, you have heard the motion. Shall the plan of organization be adopted? As many as are in favor of the adoption of the proposed plan of organization, will say '*Aye.*'"

For a moment stillness as that of the grave reigned in the vast assemblage, and then the response came in one deep thunder of approval. Not loud, but deep, as though every voice which added to the volume of utterance of that single word, was lowered to its greatest intensity by the importance of the question to be decided. The negative was called, but no single response was heard, and the people of the Oil Regions for the first time in their history were united, and pledged to fight shoulder to shoulder in the defense or in the recovery of their rights. Cheers from the thousands present broke forth in the wildest enthusiasm, and all was confusion and congratulation. The light was breaking through the darkest cloud our history had known, and sunshine and good cheer were sure to follow.

The following is the plan of organization adopted:

A plan for the organization of the Petroleum Producers' Union:

1. The territory forming the Pennsylvania Petroleum Field shall be divided into sixteen districts as follows:

*First*—Brady's Bend, Armstrong and vicinity.

*Second*—Parker's Landing, Lawrenceburg, Bear Creek, Martinsburg and vicinity.

*Third*—Foxton, Petersburg, Clarion river, both sides, Emlenton and Ritchie Run.

*Fourth*—Scrubgrass, Foster, Bully Hill, Coal City, Prentice, Angell & Co.

*Fifth*—Cochran, Franklin, Sugar Creek, Patchell Run, Hoover Farm.

*Sixth*—Reno.

*Seventh*—Bredensburg, Milton Farm and vicinity, Huff and McGrew, Hays and Farren, Morian and others, Haldeman, Forman and others, Seneca and Slate Run, Siverlyville, Gas City, Oil City, including United Petroleum Farms' Association, Hoffman Petroleum Company, Clapp Farm and vicinity, Shaffer Run, Charley Run, Haldeman and Foster Farms, and Walnut Bend.

*Eighth*—Rouseville, McClintockville, Cornplanter and Hood Farms, A[.] Buchanan, J. Buchanan, J. McClintock, Shaw Farms, Mitchell and Ralston, Main and Smith Farms, Lower Cherry Run and Steel Farm.

*Ninth*—Rynd, Blood and Tare, Moffat, Niagara, Dempsey, Cherry Tree Run, Kane Run.

*Tenth*—Columbia, Cornen and Beers, Dalzell, Boulton & Co.

*Eleventh*—Petroleum Center, Central Petroleum Company, McElheny, William and James McCray, Egbert Farm, Stevenson, Wood, Tarr Run, Benchoff, Hess, Pierson, Clairmont and all other farms in that vicinity not otherwise specified.

*Twelfth*—Miller Farm, Gregg & Foster, Pioneer, Clinton Oil Company, Brough & Heydrick, Tarr, Patterson & Caldwell, Lands of Great Republic, Morrison, Henderson, Chicago Petroleum Company, Stowel, Heidekoper, Clark Farms, Atkinson, Tallman, Shamburg and Dewey, Fleming, Dearborn, Independent Tract, and Red Hot, and Salisbury, and Benchoff Farms.

*Thirteenth*—Titusville, Church Run, Watson Flats, Enterprise, Colorado, National, Hallbrook, Davis Farms, Brown, Hebert & Vesta, Gerow, Wrigglesmith, Nettleton, and Pleasantville and vicinity.

*Fourteenth*—Pithole, Bean Farms, Cash Up, Rooker and Holmden, West Pithole, Neill Town, Tip Top, Oleopolis, Morey Farm, President, Eagle Rock and Henry's Bend.

*Fifteenth*—West Hickory, Fagundas, Beatty, Wilkins, Scott, Gorman and vicinity.

*Sixteenth*—Tidioute, Dennis Run, Economy, Triumph, Clapp Farms and New London.



All farms not above mentioned to be included in the most convenient district.

2. The producers in each district shall meet at some convenient place and choose one or more (not to exceed five) men, from their own number, through whose hands they shall pledge themselves to sell all their crude oil.

3. It shall be the duty of these committee men to sell the crude oil coming into their hands: First, to the local refiners; second, to the agents of the refiners located in distant cities, as may be designated by the Executive Committee; and third, to such shippers, dealers and exporters as may be named by the Executive Committee, and it shall be the further duty of said local committee men to keep the Executive Committee fully posted as to what is being done in their respective districts with reference to the sale and removal of all crude oil.

4. There shall be an Executive Committee composed of members of the Petroleum Producers' Union, to consist of one from each of the sixteen districts, to be chosen by the local committee, whose duty it shall be to meet from time to time, and take all necessary measures to fully carry out this plan in all its details.

5. That for the purpose of paying the expenses of this committee, one cent a barrel on all the crude oil, shall be levied, collected and paid over by the local committee men to the Executive Committee, of which the Executive Committee shall keep an account to be rendered to the producers at a future meeting.

6. It shall be the especial duty of the Executive Committee to take such measures as they may find necessary to secure uniform mileage rates of freights on all oil and merchandise of every kind, to and from the Oil Region, and employ all lawful measures for the abolition of the railway system of rebates or drawbacks.

#### PLEDGE

"I do hereby agree to sell all my production of oil through, or with the consent of the Committee of the Petroleum Producers' Union."

*First*—That an organization shall be immediately formed for the exclusive purpose of advancing money to producers upon their depositing proper Tank or Pipe Company receipts therefor with the organization or its agency.

*Second*—That the name of the organization shall be the

"PRODUCERS' PROTECTIVE ASSOCIATION."

*Third*—That its capital shall be one million dollars, with power in the directors to increase it to such an amount as in their judgment shall be necessary to accomplish the objects of the organization.

*Fourth*—That its head-quarters shall be in Oil City, and its co-operative agencies shall be located at all principal producing points.

*Fifth*—That its stock shall be divided into shares of one hundred dollars each, which stock shall be transferable only upon the books of the company at its head-quarters, with the consent of the Board of Directors.

*Sixth*—That the chairman of the General Committee be requested to appoint one person in each of the sixteen producing districts, who shall open books to receive, and every producer, manufacturer, or other party, directly or indirectly interested in our home industries be invited to subscribe to the capital stock of this organization, not exceeding fifty shares, or such part thereof as he shall elect, and no person shall at any time hold more than said number of shares.

*Seventh*—That when the sum of one million dollars shall have been subscribed and ten per centum thereof paid to five trustees to be appointed by the chairman of the General Committee, the said chairman shall give notice of an election of officers, who shall be elected by the votes of the subscribers, each share being entitled to a vote.

*Eighth*—That said officers shall consist of a President, Vice President, and such a number of Directors as shall give each district a fair presentation.

*Ninth*—That the Board of Directors shall appoint some bank or banker, in each district its co-operative agency; or in the absence of a bank or bankers, such agencies be established, as shall be most convenient for the producer, which bank or agency shall, as necessity requires, by draft or otherwise, obtain its funds from the head-quarters of the company, and be held strictly accountable therefor.

*Tenth*—That every producer shall be entitled to go to his most convenient agency, and deposit his certificate or receipt for oil, which shall be passed to his credit, and he shall receive such an advance thereof as the Board of Directors in their discretion shall deem prudent to make.

*Eleventh*—That the association shall from time to time sell the oil belonging to it, or held as security for advances overdue in such quantities and at such prices as legitimate demand will justify said

prices to be daily telegraphed from head-quarters to the several agencies.

*Twelfth*—That every producer depositing oil in the hands of the association on which no advance is made, may, if he so elect, have his oil held until such time as he shall direct its sale, and that the appropriation of oils sold from day to day shall be as follows: First, all oils ordered sold by its owner, and the balance pro rata on oils on which advances have been made and shall then be over-due.

*Thirteenth*—The association shall charge a reasonable rate of interest on all advances made, such interest to be used in defraying the expenses of the association, and the surplus, if any, shall be declared as dividends upon the full paid stock. That any surplus stock remaining in the hands of the association shall be the property of the association until taken and paid for by some party entitled thereto under the foregoing provisions, but always at par.

*Fourteenth*—When the producers of each district shall have appointed their committees, as provided in the second section of the Producers' Union, and have elected their chairman, he is requested to send to the chairman of the General Committee the names thereof.

*Fifteenth*—And it shall be the duty of the person appointed by the General Committee, as provided in section five, to use due diligence in the circulation thereof, for subscriptions, and within one week from the receipt thereof, he shall collect the ten per cent. of each subscription, as provided by section seventh, and report the same to the chairman of the General Committee, together with a list of the subscribers and the amount subscribed.

The meeting also appointed a Committee on Legislation, with instructions to proceed to Harrisburg and to ask a repeal of the charter of the South Improvement Company and the passage of a Free Pipe Bill.

The excitement in the Oil Region and the evident determination of the producers to assert their rights, and maintain them at any hazard, and the petitions sent by the people of all parts of the Oil Region, gave to the General Assembly an idea of the importance of consulting for once the wishes of this constituency, and accordingly, three days later, the *Free Pipe Bill* passed both Houses, received the signature of the Governor, and became a law. It contained, however, the following *proviso*, which the sense of justice of the oil men would not accept:

*“Provided*, that no line of pipe shall be laid under the authority of this Act within five miles of the State line for the purpose of carrying

oil out of the State, and that the owners, producers and shippers of all oil intended for Philadelphia, Baltimore and New York, using pipes laid under this act, shall give the preference to the lines of road traversing the greatest distance in this State at the same rates for transportation."

We can safely say that this spirit of accommodation is as creditable to the Legislature as it is rare, especially in Pennsylvania.

On the 15th of March, agreeably to the call of the General Committee, each of the sixteen districts into which the entire Oil Region had been divided, elected five delegates to represent them in the Producers' Union, which body met at Oil City on the following day.

We give here the names of delegates, or sub-committee men, elected by the various districts, except the first, where no election took place, the field being small and the number of operators few: [The names of delegates, or sub-committee men, elected by the various districts, have been eliminated in this reprinting.]

In response to the demand that a *Free Pipe Bill*, without provisions intended to destroy it, should be passed, or at least the proviso repealed, the Legislature on the 18th passed a bill repealing the proviso.

At this meeting of the delegates—March 18th—it was decided that each district delegation should elect from their number a member of the Executive Committee, which was accordingly done.

The following gentlemen were chosen to represent the various districts in the Executive Committee: 1st district, represented by F. W. Andrews, the principal operator there; 2d, S. D. Karns; 3d, I. E. Blake; 4th, J. B. Barbour; 5th, Wm. T. Baum; 6th, L. H. Culver; 7th, Wm. Hasson; 8th, W. S. McMullan; 9th, Henry Byrom; 10th, George Boulton; 11th, L. P. Walker; 12th, George Shamburg; 13th, S. Q. Brown; 14th, P. Schreiber; 15th, David Berry; 16th, E. E. Clapp.

The Convention of Delegates then adjourned, and the Executive Committee went into session, with S. Q. Brown in the chair.

The object of the Executive Committee at this and subsequent meetings was to perfect an organization of themselves into a working body, and to devise a plan by which their labors would be effective in securing safety against the infringement of the rights of producers, as well as to find a remedy for the present existing evils. The responsibility resting upon them was such that the greatest caution and wisdom were necessary in all their proceedings. The eyes of the entire region were upon them, and all were looking to them for relief.



On Friday, March 24th, the election of permanent officers took place, and resulted in the choice of Captain William Hasson, of Oil City, President, and W. S. McMullan, of McClintockville, Secretary and Treasurer.

It was now known by precisely what color of law the Southern Improvement Company was operating, and the Executive Committee were at no loss how to act. We give the charter under which the enemy was proceeding.

An Act to incorporate the Southern Improvement Company:

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same,* That S. S. Moon, R. D. Barclay, John A. Fowler, or a majority of them and assigns, be and they are hereby authorized and empowered to form and be a body corporate, to be known as the "Southern Improvement Company," which shall be and is hereby vested with all the powers, privileges, duties and obligations conferred upon the act to incorporate the Pennsylvania Company by the Act of the Legislature of Pennsylvania, approved the seventh of April, A. D. one thousand eight hundred and seventy, and the supplements thereto.

SEC. 2. That the stockholders of said company, by and with the consent of the holders of not less than two-thirds of the shares of stock, be and they are hereby authorized to change the name of the said company and designate the location of its general office, which changes shall be valid after the filing of a certificate in the office of the Secretary of the Commonwealth, signed by the president, and attested by the seal of the said company.

The Act incorporating the Pennsylvania Company, referred to above, is the one that details the powers conferred on the incorporators. We give it entire.

An Act to incorporate the Pennsylvania Company:

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same,* That Andrew J. Howard, J. S. Swartz, G. B. Edwards, J. D. Welsto and J. P. Malin, their associates, successors and assigns, or a majority of them, be and they are hereby authorized to form and be a body corporate, to be known as the Pennsylvania Company, and by that name, style and title

shall have perpetual succession, and all the privileges, franchises and immunities incident to a corporation; may sue and be sued, implead and be impleaded, complain and defend in all courts of law and equity, of record and otherwise; may purchase, receive, hold and enjoy, to them, their successors and assigns, all such lands, tenements, leasehold estates and hereditaments, goods and chattels, securities and estates, real, personal and mixed, of what kind and quality soever, as may be necessary to erect depots, engine houses, tracks, shops and other purposes of the said corporation, as hereafter defined by the second section of this act, and the same from time to time may sell, convey, mortgage, encumber, charge, pledge, grant, lease, sub-lease, alien and dispose of, and also make and have a common seal, and the same to alter and renew at pleasure, and ordain, establish and put in execution such by-laws or ordinances, rules and regulations as may be necessary or convenient for the government of the said corporation, not being contrary to the Constitution and laws of this commonwealth, and generally may do all and singular the matters and things which to them shall appertain to do for the well-being of said corporation, and the management and ordering of the affairs and business of the same: *Provided*, That nothing herein contained shall be so construed as to give to the said corporation any banking privileges or franchises, or the privilege of issuing their obligations as money.

SEC. 2. That the corporation hereby created shall have power to contract with any person or persons, firms, corporations or any other party, howsoever formed, existing or that may hereafter exist, in any way that said parties or any of them may have authority to do, to build, construct, maintain or manage any work or works, public or private, which may tend or be designed to improve, increase, facilitate or develop trade, travel or transportation and conveyance of freight, live stock, passengers and any other traffic, by land or water, from or to any part of the United States or the Territories thereof; and the said company shall also have power and authority to supply or furnish all needful material, labor, implements, instruments, and fixtures of any and every kind whatsoever, on such terms and conditions as may be agreed upon between the parties respectively; also to purchase, erect, construct, maintain, or conduct, in its own name and for its own benefit, or otherwise, any such work, public or private, as they may by law be authorized to do (including also herein lines for telegraphic communication), and to aid, co-operate and unite with any other company, person or firm in so doing.

SEC. 3. The company hereby created shall also have power to make purchases and sales of or investments in the bonds and securities of other companies, and to make advances of money and of credit to other companies, and to aid in like manner contractors and manufacturers; and to receive and hold, on deposit or as collateral, or otherwise, any estate or property, real or personal, including the notes, obligations and accounts of individuals and companies, and the same to purchase, collect, adjust and settle, and also to pledge, sell and dispose thereof, on such terms as may be agreed on between them and the parties contracting with them; and also to indorse and guarantee the payment of the bonds and the performance of the obligations of other corporations, firms and individuals, and to assume, become responsible for, execute and carry out any contracts, leases or sub-leases made by any company to or with any other company or companies, individuals or firms whatsoever.

SEC. 4. The company hereby created shall also have power to enter upon and occupy the lands of individuals or of companies, and making payment therefor or giving security according to law, for the purpose of erecting, constructing, maintaining or managing any public work, such as is provided for or mentioned in the second section of this act, and to construct and erect such works thereon, and also such buildings, improvements, structures, roads or fixtures as may be necessary or convenient for the purposes of said company, under the powers herein granted; and to purchase, make, use and maintain any works or improvements connecting or intended to be connected with the works of the said company; and to merge or consolidate, or unite with the said company the improvements, property and franchises of any other company or companies, on such terms and conditions as the said company may agree upon; and to fix and regulate the tolls or charges to be charged or demanded for any freight, property or passengers traveling or passing over any improvement erected, managed or owned by the said company, or on any merchandise or property transported over any road whatever by the said company, and to make, from time to time, dividends from the profits made by said company; the several railroads managed by said company shall continue taxable, as heretofore, in proportion to their length within this State respectively; and the said Pennsylvania Company shall be taxable only on the proportion of dividends on its capital stock and upon net earnings or income, only in proportion to the amount actually carried by it within the State of Pennsylvania,

and all its earnings or income derived from its business beyond the limits of this commonwealth shall not be liable for taxation.

SEC. 5. The capital stock of said company shall consist of two thousand shares, of the value of fifty dollars each, being one hundred thousand dollars, and with the privilege of increasing the same by a vote of the holders of the majority of the stock present at any annual or special meeting, to such an amount as they may from time to time deem needful, and the corporators, or a majority of them, named in the first section of this act, shall have power to open books for subscription at such times and places as they may deem expedient; and when not less than one thousand shares shall have been subscribed, and twenty per centum thereon shall have been paid in, the shareholders may elect not less than three nor more than nine directors to serve until the next annual election, or until their successors shall be duly elected and qualified; and the directors so elected may, and they are hereby authorized and empowered to have and to exercise, in the name and in behalf of the company, all the rights and privileges which are intended to be hereby given, subject only to such liabilities as other shareholders are subject to, which liabilities are no more than for the payment to the company of the sums due or to become due on the shares held by them; and should the capital stock at any time be increased, the stockholders, at the time of such increase, shall be entitled to a *pro rata* share of such increase, upon the payment of the instalments thereon [thereon] called for; and whenever an increase of capital stock is made, a certificate thereof, duly executed under the corporate seal of the company, and signed by the president and secretary, shall be filed with the Auditor General before the same shall be deemed to be valid.

SEC. 6. The principal office of the said company shall be in the city of Pittsburg; but the directors, under such rules and regulations as they may prescribe, may establish branches or agencies in other parts of the State, or elsewhere; all of the directors of said company shall be citizens of the United States, and reside therein.

SEC. 7. The directors shall be elected annually by the stockholders, on the first Tuesday of June of each year; and they shall elect from their number, at the first meeting of the board after their election, a president, and shall also have power to elect from their number, or otherwise, a vice-president, a treasurer and secretary, and such other officers, clerks and agents as the business of the company may require; all elections for directors shall be by ballot, and every stockholder



shall be entitled to one vote for each share of stock held by him; but no person shall be eligible as director who is not a stockholder to the amount of ten shares; at the annual or special meetings a quorum shall consist of stockholders owning at least one-half of the capital stock.

SEC. 8. Ten days' notice shall be given, by publications in two newspapers published in the city of Pittsburg, of the time and place of the annual election; which election shall be conducted by three stockholders, one of whom shall act as judge, and the other two as inspectors.

SEC. 9. The board of directors shall make all by-laws necessary for conducting the business of the company; which by-laws shall be at all times accessible to persons transacting business with them; the said directors shall have power, by a vote of a majority of their number at any meeting of the board, to change the name of the said corporation; and by any new name, thus adopted, upon filing with the Secretary of the Commonwealth and the Auditor General a truly certified certificate, the said company shall have, hold and enjoy all the rights, powers, privileges and immunities hereby granted; the directors shall have power to require payment of the amount remaining unpaid on the stock of said company, at such time and in such proportions as they shall think proper; the said assessment to be made as the by-laws of said company shall direct.

ELISHA W. DAVIS,  
Speaker of the House of Representatives, *pro tem.*

CHAR[L]ES H. STINSON,  
Speaker of the Senate.

APPROVED—The seventh day of April, Anno Domini one thousand eight hundred and seventy. JNO. W. GEARY.

The Committee on Transportation and Capt. Hasson, President of the Union, had proceeded to New York to confer with the officers of the railroads holding contracts with the Southern Improvement Company, and, if possible, to secure the abrogation of the same.

They were, however, in this difficulty: they were only so many private individuals, without certificates of power to act for the great mass of producers in the Oil Region.

The Executive Committee accordingly met on the 25th and sent the following telegram to Capt. Hasson, at the Fifth Avenue Hotel, New York:

"To Capt. Wm. Hasson, President Petroleum Producers' Union:

"ROOMS OF THE EXECUTIVE COMMITTEE,  
"OIL CITY, Pa., March 25th, 1872—12 M. In session.

"The organization of the Petroleum Producers' Union is fully completed. All oil from this date will be shipped through the Executive Committee and sub-committees. We await the action of the railroad lines. We must have equitable rates of freight and no drawbacks. We hereby authorize you to pledge the Petroleum Producers' Union to any contract with the railroad lines which you may deem expedient."

(Signed)

SAM. Q. BROWN,  
President, *pro tem*.

W. S. McMULLAN,  
Secretary.

The following telegram was also sent to the exporters of petroleum at New York, Philadelphia and Baltimore:

"The Petroleum Producers' Union ask your co-operation by refusing to buy any oil from or sell any to any person or persons in any way connected with the Southern Improvement Company."

(Signed)

W. S. McMULLAN,  
Secretary.

To all of these favorable replies were received.

On the 29th the committee again met. The President had returned and reported entire success in his conference with the railroad representatives, and presented a contract with them, which will be found in the report of the Transportation Committee.

The Executive Committee passed resolutions ratifying the contract with the railroad companies, and agreeing to carry it out in good faith.

The following gentlemen were appointed a committee to confer with the Sub-committee of Commerce appointed by Congress, to investigate the charges preferred against the South Improvement Company: Messrs. C. Heydrick, S. D. Karns, C. V. Culver, George Boulton and S. Q. Brown. The action of this committee may be found in their report.

Thus far the success of the union had fulfilled the hopes of the most sanguine. The passage of a Free Pipe Bill, and the prompt repeal of an objectionable proviso, by the Legislature, had fully demonstrated their strength and moral power. A short history of the Free Pipe Bill will make this more apparent.

Four years ago, in the session of 1868-69, two bills were introduced into the Legislature upon the subject of conducting oil in pipes. These bills came before that body almost simultaneously. The one was a private bill, entitled "The Western Oil and Pipe Bill." It named seven incorporators, and granted the exclusive right to conduct oil in pipes from the wells, together with other very extended powers. The other was a general bill, offered in the interests of the people, entitled "The Free Pipe Bill." This provided that any individual or corporation, by filing a certificate at Harrisburg, under the general mining law, and complying with such restrictions as to individual rights as are imposed by the general railroad law, shall have the right to lay pipes for the transportation of oil wherever the same may be needed.

The Western Pipe Bill passed both houses, and received the Governor's approval, with very indecent haste. The Free Pipe Bill hung in suspense, and was finally killed with the single flimsy excuse that a Free Pipe Bill would permit producers to invoke competition and throw their product upon the New York lines of transportation.

Each year since then the people of the Oil Regions have united in petitioning the Legislature for a Free Pipe Bill, and they have been met at each application by the same reason and denial, until the incensed producers *demand*ed their rights. It is claimed that the importance of the bill to producers was not known at Harrisburg, or it would have been made a law long since.

In answer we would say that the Legislature has been petitioned each year, and these petitions set forth the reasons why the transportation of oil in pipes should be authorized by a general law.

We had shown that the great bulk of oil was not produced upon the lines of railroad, and must be taken there either by pipes or more expensive means. That a monopoly of oil-piping privilege had imposed on us the most exorbitant charges; in some cases these charges being five times as great as the actual cost of the transportation would be with free competition.

These and a hundred other reasons, either of which should have secured the passage of the bill had all been urged, but without success.

The producers *demand*ed it as a *right*, and the Legislature hastened to obey.

The Executive Committee adopted the following rules and regulations for their government:

## RULES FOR THE ORGANIZATION AND GOVERNMENT OF THE EXECUTIVE COMMITTEE OF THE PETROLEUM PRODUCERS' UNION.

### SECTION I.—OFFICERS.

The officers shall consist of a President, two Vice-presidents, a Secretary and Treasurer.

### SECTION II.—PRESIDENT.

The duties of the President shall be to act as chief executive officer in the transaction of all business, and to preside at all meetings of the Executive Committee.

### SECTION III.—VICE-PRESIDENTS.

The duties of the Vice-presidents shall be to assist the President in the performance of his duties, and, in his absence, to act in his stead.

### SECTION IV.—TREASURER.

The duties of the Treasurer shall be to keep correct accounts of, and be responsible for all moneys received from each district, and to pay out such moneys upon the order of the President, countersigned by the Secretary.

### SECTION V.—SECRETARY.

The duties of the Secretary shall be to keep the minutes of each executive session. To keep such records, as may be advisable, of the plans, agencies and operations of combinations antagonistic to the Producers' Union, as such plans may be developed or come to his knowledge, either indirectly or through members of local committees with whom he will correspond; and to perform such other duties as in the judgment of the officers and members of the Executive Committee, exigencies may require.

### SECTION VI.—MEMBERS.

Each member of the Executive Committee shall act as chairman of the Local Committee in his district. He shall, when necessary, in con-



nection with the Local Committee of the district, establish an agency therein for the approval of all orders for sales of oil. He shall collect, prior to endorsing such orders, one cent per barrel on all oil sold, with the assent of the agency; and on the first Monday of each month he shall pay over to the Treasurer of the Petroleum Producers' Union all sums thus collected. It shall be the duty of such agency to keep a full record of all business transactions, and to keep a full and accurate account, as far as possible, of all oil shipped in any way from said district, with amount of daily production, amount of oil held in tanks, and any other matter of interest relating to the oil business; reporting any important information as soon as received to head-quarters.

#### SECTION VII.—OF MEETINGS.

The Executive Committee shall meet at ten o'clock A. M., at its office in Oil City, on the first and third Tuesdays of each month, and special meetings may be held upon the call of the President or of any three members of the Executive Committee.

#### SECTION VIII.—QUORUM.

A majority of members shall constitute a quorum to transact business, and a less number may meet and adjourn from time to time, until a quorum be present.

Any member of the Executive Committee not being able to attend shall be authorized to deputise another member of the Local Committee to represent his district.

#### SECTION IX.—THE ELECTION OF OFFICERS.

The Committee shall meet upon the fourth Friday in March of each year and elect officers for the ensuing year.

#### SECTION X.—AMENDMENTS.

Alterations in and additions and amendments to the foregoing rules may be made at any regular meeting of the Executive Committee if ratified.

Meantime the Committee on Legislation were not idle, but insisting at Harrisburg that the charter of the South Improvement Company should be repealed.

A bill to that end was introduced, passed both Houses, and on the second of April became a law by receiving the signature of the Governor.

A committee having been appointed to prepare a circular setting forth the leading features of the South Improvement Company, and its proposed plain [plan] of attack upon the industries of the country, and an address to the leading newspapers of the United States, and all Boards of Trade, reported by the chairman, W. S. McMullan, the following circular and address, copies of which were mailed to more than two hundred newspapers, and all the Boards of Trade and Chambers of Commerce in the States.

### ADDRESS.

WM. HASSON, President.

S. D. KARNS, }  
G. SHAMBURG, } Vice-presidents.

W. S. McMULLAN, Sec'y and Treas.

### OFFICE OF THE PETROLEUM PRODUCERS' UNION, OIL CITY, PENNSYLVANIA.

*To all Newspapers and Boards of Trade opposing monopoly.*

GENTLEMEN:—We respectfully but earnestly call your attention to the following facts:

Within a few weeks there has been developed in our State a most dangerous conspiracy, which, while it at present only aims to prey upon the trade in Petroleum, has in its possession *chartered privileges* by which it may reach and ruin any or every branch of productive industry in the land, or subvert to its own sole emolument the entire domestic commerce of the country.

This conspiracy against all honest trade or traffic is known in its charters as the SOUTH IMPROVEMENT COMPANY, and its line of action is legalized by at least fourteen separate charters granted by the Legislature of Pennsylvania, but which may be at any time extended to and confirmed by other States or Territories, and thus monopolize and ruin at pleasure any branch of trade or industry. Petroleum is the victim to-day. Coal, iron, cotton, breadstuffs or live stock may be in the grasp of the monopoly to-morrow.

The great danger lurking under the name of this South Improvement Company may be seen in its contracts with all the great lines of railway from the Oil Regions to the sea-board, by which the rates of freight were advanced more than *one hundred* per cent., with an average rebate or drawback to the members of the monopoly, of one

dollar per barrel on all oil shipped from the fields of production. These drawbacks amount in the aggregate to nearly *seven millions of dollars annually*. This alone on the *carrying* trade. To which they seek to add the *refining, exporting* and marketing of our product, which amounts in the aggregate to *seventy million dollars per annum*.

That this same contract may be extended to cover all commercial products, is evident from the charters; and that negotiations to that effect are now in progress we have good reason to believe.

We call upon you therefore to co-operate with us in the interests of the freedom, trade, and with other Boards of Trade, Chambers of Commerce and Produce Exchanges, in the institution of the most rigorous measures of self-defense.

We urge you to exert all your influence with your Representatives in Congress to support such measures offered there as will the better prohibit, for all future time, any monopoly of railroads or other transportation companies from laying embargoes upon the trade between States by a system of excessive freights or unjust discrimination against buyers or shippers in any trade by the allowance of rebates or drawbacks to any persons whatever. This is a matter of national importance, and only the most decided action can protect you and us from the scheming strength of these monopolies.

Now is the time to strike an effective blow for reform and against monopoly. Your action and ours will develop the movement into a national measure, and as such it must prevail. Committees representing us are now in Washington before a sub-committee appointed to make investigations, and we hope you will not delay co-operation nor defer sending delegates to the national capital to confer with ours to secure legislation for present relief and future safety.

We direct your attention to the accompanying circular, which more fully explains the position.

WM. HASSON, President.

W. S. McMULLAN, Sec'y.

#### CIRCULAR.

The following list of companies holding charters similar, if not precisely like that of the South Improvement Company, may claim direct kinship with that monopoly:

The Pennsylvania Company, American Contract Company, National Land Improvement Company, Central Improvement Company, Crescent Improvement Company, Morgan Improvement Com-

pany, Occidental Improvement Company, Continental Improvement Company, Southern Transportation Company, and Southern Improvement Company.

The first, and greatest in active operation of these, is the Pennsylvania Company, to which the charters of the others refer in the grant of privileges. They are authorized to "lease and contract for the management of any railroad or company, public or private, in any part of the United States or the territories thereof; to deal in stock, bonds, or other investments; to enter upon lands and to have branches throughout Pennsylvania or elsewhere."

With these limitless powers the Pennsylvania Company has already begun the work of absorbing the great lines of transportation of the South and West.

Acting in harmony with this in the great work of monopolizing all branches of trade, the South Improvement Company has addressed a private circular to the managers of all the Western and Southern railways to meet at Cleveland for the purpose of arranging a schedule for the transportation of live stock to the sea-board.

This combination has first attacked the Petroleum trade because its fields of production were smaller and more easily reached than those of other product. The petroleum product amounts to seventy million dollars per annum. We export thirty-seven million dollars' worth of petroleum annually, being fourth on the list of exports.

The attack will extend to coal. Already the entire mining industries of the anthracite coal regions are controlled by these monopolies and smaller dealers crushed out of existence.

The monopoly is moving upon the trade in live stock.

Cotton, lumber, iron and breadstuffs will follow. We append the contract rates agreed upon between the South Improvement Company and the railroad companies of the East. These rates apply only to petroleum, the rates upon breadstuffs and live stock being secret and beyond our reach:

#### TABLE OF FREIGHTS AND REBATES, SOUTH IMPROVEMENT COMPANY:

	Freight.	Rebate.
Per 45 gallons crude from Oil City, Union,		
Corry or Irvineton to Cleveland . . . .	\$ 80	\$ 40
From Oil City, Union, Corry or Irvineton		
to Pittsburgh . . . . .	80	40



From Oil City, Union, Corry or Irvineton to New York . . . . .	2 56	1 06
From Oil Cits [ <i>sic</i> ], Union, Corry or Irvine- ton to Philadelphia . . . . .	2 41	1 06
From Oil City, Union, Corry or Irvineton to Baltimore . . . . .	2 41	1 06
From Oil City, Union, Corry or Irvineton to Boston . . . . .	2 71	1 06

## REFINED.

	Freight.	Rebate.
Per 47 gallons refined from Pittsburgh to New York . . . . .	\$ 2 00	\$ 50
From Pittsburgh to Philadelphia . . . . .	1 85	50
From Pittsburgh to Baltimore . . . . .	1 85	50
From Cleveland to Boston . . . . .	2 15	50
From Cleveland to New York . . . . .	2 00	50
From Cleveland to Philadelphia . . . . .	1 85	50
From Cleveland to Baltimore . . . . .	1 85	50
From Oil City, Union, Corry or Irvineton to New York . . . . .	2 92	1 32
From Oil City, Union, Corry or Irvineton to Philadelphia . . . . .	2 77	1 32
From Oil City, Union, Corry or Irvineton to Baltimore . . . . .	2 77	1 32
From Oil City, Union, Corry or Irvineton to Boston . . . . .	3 07	1 32

On all the western shipments from the points named, and on all shipments either East or West from any points intermediate to those named, the ring was to receive a rebate equal to one-third of the gross rate.

By order of the Executive Committee,

PETROLEUM PRODUCERS' UNION.

## THE RAISING OF THE BLOCKADE.

Tuesday, April 9th, was an eventful day. The regular meeting of the Executive Committee being called for that day, the President issued a call for a mass meeting to convene at the Academy of Music to receive the action or instruction of the committee.

The country was thoroughly aroused on account of a sale of oil made by certain parties in open violation of the producers' pledge, and the committee esteemed it judicious to assemble the people to decide upon the course to be pursued in case the railroads refused to give official information of the abrogation of the contracts with the South Improvement Company, and also with the Standard Oil Company, if any such had existed. It had been determined at their previous meeting that if such information was forthcoming and satisfactory, upon the 9th the channels of trade would be opened to all, and it would be better if the representative producers were present to ratify this action.

The committee went into secret session at 9 A. M., and the mass meeting waited as patiently as might be for the result of their deliberations.

At 2.30 P. M. messengers informed the meeting that the committee had adopted a report and would soon be ready to offer it to the people. The wildest excitement prevailed, and the appearance of the committee was the signal for the most enthusiastic cheering and other demonstrations of confidence in the result of their long and tedious session. When order and quiet was restored, Capt. William Hasson, the chairman of the Executive Committee, who was received with great applause, stated that the committee had been in session ever since nine o'clock, engaged in the most important work that had yet come before them. They had put themselves in communication with all parties concerned. They knew they had to submit their action to a large and intelligent constituency. Upon the action of the oil men to-day will depend our future prosperity. The following telegrams were sent to the officers of all the railroads known to be parties to the contract with the South Improvement Company, and we submit them and their answers as the basis of the action taken by the committee to-day. Mr. McMullan, the secretary, whose appearance was also heartily cheered, then read the following telegram, sent to each of the railroad officials:

OFFICE PETROLEUM PRODUCERS' UNION,  
OIL CITY, PA., April 4th, 1872.

We are informed by parties known as members of the South Improvement Company, now representing the Standard Oil Company, who are in the market over-bidding other shippers, that all contracts between the railroad companies and South Improvement and Standard

companies are cancelled. Will you please give us official notice whether such contracts are cancelled or not? The people in mass meeting assembled have instructed the Executive Committee not to sell or ship any oil to these parties until we receive such notice. Please answer at once, as the excitement is intense, and we fear violence and destruction of property.

[Signed.]\*

WM. HASSON, President.

W. S. McMULLAN, Secretary.

To which the following answers were received:

NEW YORK, April 8th, 1872.

*To Captain William Hasson:*

The Erie Railway Company has ignored the South Improvement Company[.] I am on hand at the oil docks as agent of the company to receive and take charge of all oil sent.

O. H. P. ARCHER, *Agent*.

NEW YORK, April 8, 1872.

*To Captain William Hasson:*

Contract between the South Improvement Company and the railroad companies cancelled. Have no arrangements of any nature whatever with Standard Company. The only existing arrangement is with you.

G. B. McCLELLAN.

NEW YORK, April 9, 1872.

*To Captain William Hasson:*

Your telegram of to-day received. The agreement with the South Improvement Company referred to has been formal[ly] abrogated and cancelled. It never was effective. I have never known of any agreement with the Standard Oil Company. Although the agreement with the South Improvement Company was never effective, it was nevertheless deemed best that it should be formally canceled.

HORACE F. CLARK,

*President Lake Shore and Michigan Southern Railway.*

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\* Bracketed in original publication.

NEW YORK, April 8, 1872.

*To Captain William Hasson:*

The Vice President isabsent [*sic*]. The Erie Railway Company has abrogated the contract with the South Improvement Company, and has given notice of the same to the other railroad companies who were parties to that contract. This company will carry and store oil, without restriction, for all parties, be they large or small shippers.

HOMER RAMSDELL,  
*Chairman of Committee.*

PHILADELPHIA, April 6, 1872.

*To Captain William Hasson, President Executive Committee:*

All contracts between the South Improvement Company and the railway companies have been terminated officially, and the charter of the company has been repealed. I am confident there is not any contract between the Standard Oil Company and any of the trunk lines, as I attended the meeting with Mr. Vanderbilt, of the New York Central, and Devine, of the Erie Company, at New York to-day, when the terms of formal agreement for a period of five years were prepared and is now in the hands of the scrivener. It will be signed Monday or Tuesday next, and I have no doubt will be ratified by the respective boards of directors without delay, as it is in exact accord with the contract made with your committee at New York and the understanding then made between railway companies.

THOMAS A. SCOTT  
*Vice President P. R. R. Co.*

NEW YORK, April 6, 1872.

*To Captain William Hasson:*

Your dispatch was not received until Sunday morning. The South Improvement Company contract was cancelled with all the railroads. The New York Central and Hudson River railroad companies have no contract with the Standard Oil Company. The agreement of March 25th between the railroad companies and joint committees of producers and refiners was that all arrangement for oil transportation should be on the basis of perfect equality to all shippers, producers and refiners, and that the parties were to work for the mutual interests of each other. The Standard Oil Company has been for the past three or four years our largest customers [*sic*]. I am informed on



undoubted authority that the latter company has had no connection with the South Improvement Company, but that some of its stockholders were also stockholders in the South Improvement Company. I submit, is it not due to this company under the agreement that its patrons should be allowed to continue its business as heretofore.

W. H. VANDERBILT,  
*Vice President.*

Also the following to the Standard Oil Company of Cleveland:

OIL CITY, PA., April 4, 1872.

*To the Standard Oil Company, Cleveland, Ohio:*

We are informed by members of your company that all the contracts which you hold with the railroad companies or the South Improvement Company with the railroad companies have been canceled. If so, please give us certified official information of the same from your company and the railroad companies, for the action of the Executive Committee of the Petroleum Producers' Union on Tuesday next.

WILLIAM HASSON, President.  
W. S. McMULLAN, Secretary.

#### REPLY.

CLEVELAND, OHIO, April 8, 1872.

*To Captain William Hasson:*

In answer to your telegram, this company holds no contracts with the railroad companies or any of them, or with the South Improvement Company. The contracts between the South Improvement Company and the railroads have been cancelled, and I am informed you have been so advised by telegram. I state unqualifiedly that reports circulated in the Oil Region and elsewhere, that this company or any member of it threatened to depress oil, are false.

JOHN D. ROCKAFELLER [*sic*], President.

The report of the Executive Committee was then read as follows by the Secretary, and the reading elicited the greatest enthusiasm:

WHEREAS, We have secured from the different trunk lines of railway, a fair rate of freight, equal to all shippers and producers, great or small, with an abolition of the system of rebates and drawbacks to

parties heretofore especially favored, which has heretofore been so destructive to our interests, and are assured that the present arrangement will be continued.

WHEREAS, We have received official information from the different trunk lines of railway that all the contracts with the South Improvement Company and Standard Oil Company have been abrogated and cancelled, and,

WHEREAS, We have full assurance from the Washington committee that the throwing off the restrictions from trade, will not embarrass their investigation, but that the sub-Committee of Commerce will nevertheless continue, as the principle involved, and not this particular case alone, is the object of the investigation, and,

WHEREAS, The Legislature has forwarded our interests by satisfactory legislation,

*Resolved*, That in our opinion the time has arrived when it is proper to open the channels of trade to all parties desiring to purchase or deal in oil on terms of equality.

The report was received with every mark of approbation and delight.

The Washington committee submitted their report which was received and adopted.

A movement was also set on foot to raise a fund to defray the expenses of the various committees, and other expenses incurred by the Producers' Union.

An ample fund was contributed, and has been applied to the use designed, as will be seen by reference to the report of the Treasurer, to be found elsewhere.

## Leaves from the Diary of an Oil Man. No. 3.

An unknown writer prepared a fictional diary of the time he spent in Pithole. The diary was published in three sections and the third part is reprinted here; it is one of the most humorous writings to emanate from the oil fields and at the same time portrays events that happened daily. (Heenan's Cottage was notorious as perhaps the toughest of the saloons and brothels in Pithole.) *The Petroleum Monthly* (November, 1872), pages 315-317.

"TRUTH IS STRANGER THAN FICTION," BUT NOT SO INTERESTING.

FRIDAY.—I arose a little sore this morning at daylight, and tried to mend my clothes before going down to breakfast, but my coat was too badly torn, so I was forced to borrow one of the hotel porter. I also found that my shirt front had received several decorations during the "relaxation" of the night previous, which in the excitement of the moment I failed to notice. These consisted of tobacco quids, and stains that looked as if a glass of beer had been thrown at me. I procured a piece of chalk and gave the shirt-bosom a "circus wash" or in other words chalked it over until it was a beautiful white.

Amused myself during the afternoon by playing billiards for the drinks in the basement of the Chase House, and listening to the accounts of the row of the night before. Played forty games of billiards—lost thirty-six, which cost me at forty cents per game \$14.40, while my bill at the bar was \$26.90. I must shut down on some of my expenses.

SATURDAY.—Visited my new rig on the Rooker farm to see how the well was getting along. Everything is progressing finely and my men say they will have the driving pipe down by to-morrow, and ready to go to drilling. I informed them that I generally observed the Sabbath myself (I did not mention how) and that it was my wish to do as little Sunday work as possible, but I had heard experienced oil men say that it "hurt a well to stop drilling over Sunday," and thought they had better keep the walking beam going. The engineer informed me that he would need a steam gauge, and I told him to procure one, at the same time winking and nodding my head toward an engine house on the flats near by. When I arrived at my hotel at dinner time I found a quart bottle of Heidsick standing by my plate. I looked around to see who paid me this compliment and that every individual in the dining-room had been similarly treated. I afterward learned one of the boarders had "struck a big thing on the flats

that forenoon," and that this was the customary method of announcing this kind of success. Wrote to "Mary" saying I was "too busy around the well to write a long letter." Rubbed the letter and envelope over my boots to give them an oily look, smell, and business appearance. Played pin pool until midnight and went to bed, ten dollars out.

SUNDAY.—This has been a dry day for me, as the stringent liquor laws of this State prohibit the sale of intoxicating liquors on the Sabbath. This does not have any reference to most of the whisky sold here, as the latter is so weak it cannot run out of the bottle but has to be drawn out by suction. I found out that by going to my room and ringing the porter's bell, I could obtain any drink desired, and I now feel easier, in under my vest. Mr. Muckett who owns a well and lease near mine on the flats, informed me that some thief had "stolen his steam gauge last night, but that he suspected where it had gone and should look around to-morrow." I guess I will go down to the well and see if my engineer has put his private mark on the steam gauge he purchased. Some one might claim it, and I should then like to be able to swear to it.

MONDAY.—The cheek of some men is wonderful: Old Muckett came to my well this morning and after prowling around a few minutes went away but shortly returned with a gang of men and without saying a word attempted to unscrew the steam gauge that my employee had bought and paid for a day or two before. He said he thought he recognized a bale of sand-pump rope as one that he had missed a week previous, and also intimated that my engine and boiler were bought in the night. I caressed him on the head with a heavy monkey-wrench, at this point in his conversation; at the same time my employees wafted the rest of the cheeky Muckett's followers from the engine house. This country is full of rough characters with whom rough dealing is necessary to get along. Went to my hotel and read a chapter in the Bible to compose my brain. I selected a portion of Solomon's song, and also where Samson slew three thousand asses with the jaw-bone of a Philistine.

TUESDAY.—The post-office was robbed last night, and I have just written to Mary, that if she does not receive a letter from me containing money this week, she must lay it to the thieves who stole the mail bags. I have half a notion to join the "Swordsman's Club," an intellectual and political organization that has been started here to control the city election, and aid the cause of temperance by destroy-



ing all the liquor they can get hold of. I have not yet attended any of their meetings, but am told they are devoted principally to intellectual discussions, and that some of the oldest inhabitants are members of the club.

WEDNESDAY.—Last night I was invited by the Judge of the Municipal Court of Pithole, to attend a public ball to be given by a certain class of citizens in honor to himself, the legal fraternity and other prominent officials. I did not know that there was sufficient "society" in Pithole to get up a ball, but my friend assured me there was, and that in sociability the inhabitants excelled those of all other cities. I made a careful toilet, and about half-past nine o'clock P. M. hired a stout colored man to carry me on his shoulders to the scene of gaiety which was in a long hall on Spring street, and over a billiard room and livery stable, the latter diffusing a delicious aroma of old mown hay through the hall.

My ticket read: "Grand social ball, for the benefit of Miss Nellie De Haywood. Price fifty cents.

"Come one, come all  
To my grand ball."

I had never mingled in good society much previous to coming to the oil region, but was not going to show my greenness by asking any questions, so I ascended the stairs and found myself in the midst of three hundred dancers male and female who were in the mazes of a waltz. Before I had taken my hat off a young woman with flax hair seized me around the waist and began to whirl me. Though surprised at what seemed a breach of etiquette I was soon set at rest by hearing my friend, the police justice, say as we waltzed by him "that's all right, old man, she belongs to one of the first families of Pithole." My waltz made me dizzy, but I have a faint remembrance of hearing the fiddler say, "Chassez to the bar," of pouring something that tasted like turpentine and goose oil down my throat, and then found myself at daylight this morning asleep in under the front steps of the Chase House, with my hat, my pocket-book and watch gone, in fact nothing left me but my under-clothes and a headache.

\* \* \* \* \*

THURSDAY.—I saw a man from Titusville get whipped this morning because he remarked that Pithole was the most demoralized town he

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† Asterisks in original.

ever saw, and he had been around the world twice. Served him right. I do not see any of this demoralization—if it exists it is not among the better class with which I associate. I hear that a man was shot last night in a Free and Easy, he was a quiet, industrious bar-keeper in a boarding-house called the “Heenan Cottage.”

## Oil Shafts and Deep Wells

A Titusville newspaperman, J. T. Henry, published a valuable and authentic book of petroleum facts early in the history of the industry. It included brief mention of three attempts to mine for oil rather than to drill for it; the first was at Tarentum prior to the Drake Well, the second was at Tidioute in 1864, and the third was near Petroleum Center in 1866. All were failures. The stone ramparts of the Petroleum Center shaft can still be seen near that place.

This information is from Henry's book *The Early and Later History of Petroleum* (Philadelphia, 1873), pages 222-223.

Many, in the early history of oil developments entertained the idea of sinking shafts so as to obtain oil in vast quantity, and then, as it were, to tap the fountain at its head. Instances are recorded of such shafts being sunk to the depth of from two hundred to five hundred feet, in Burmah, which have yielded large quantities of oil for hundreds of years. In these Burmese shaft-wells, the mode of lifting the oil is not remarkably skillful, the entire work being accomplished by buckets. When it is necessary to clear the shafts, men are let down by means of ropes, and they often die from the effects of the gas. Life, however, is cheap in that country; and there is no difficulty in keeping the wells clear at moderate cost.

The first oil shaft sunk in this country, was near Tarentum, in Allegany County, about twenty miles above Pittsburgh, which was finished in the latter part of 1859. The third sand rock in this locality is found at a depth of not much less than two thousand feet, and as the shaft was sunk to a depth of only one hundred and sixty feet, it is needless to say that little or no oil was obtained. The salt wells of that section, which usually penetrate to a great depth, have always yielded more or less oil mixed with salt water.

On the south side of the Allegany river, opposite Tidioute, is a shaft, sunk in 1865 by the New York Enterprise and Mining Company. The aim of the company was to penetrate, if possible, the third sand rock, and then tunnel into it. The Tidioute shaft is the only

one in this country which has penetrated the third sand rock. The shaft is twelve by eight feet in width, and a hundred and sixty feet deep. Upon striking the oil rock, holes were drilled at various angles, and quite a large amount of rock was removed and brought to the surface. The men worked in "towers" of eight hours each, and the shaft was kept supplied with fresh air by means of a powerful air blast. At the end of one of the towers the men came up to the surface, the engine was for some reason stopped, and the gas accumulated. The two gangs of men were seated on the curbings round the edge of the shaft, and Mr. Hart, the foreman, occupied a position on a plank directly over the mouth of the pit. As a preliminary to descending, one of the men dropped a lighted taper into the shaft, which was instantly followed by a powerful explosion. The men were thrown violently back from the curbing, and as soon as they recovered from the shock, they found that Mr. Hart had disappeared into the pit below. The body of Mr. Hart was found in a shockingly mangled condition, having been tossed from beam to beam on its way to the bottom. His death, more than anything else, put a stop to the operations,—at least no work was ever done after that.

A second shaft well was put down at Tidioute, about the date of the one described above. We have, however, been unable to obtain reliable data in regard to it.

Another shaft was sunk near the Hyde and Egbert farm, below Petroleum Centre. Work was suspended on reaching one hundred and sixty feet, owing to the large flow of gas, and the great cost of the undertaking.

In November, 1865, Mr. Jonathan Watson, of Titusville, conceived the idea of drilling a well beyond the third sand rock, in hope of reaching a fourth sand. Drilling on this well was prosecuted for upwards of two years without reaching a fourth sand rock. This well was cased with three and a quarter inch casing, to its full depth of two thousand one hundred and thirty feet, and pumped, but without any show of oil. This enterprise cost Mr. Watson upward of twenty-five thousand dollars.

Probably the deepest boring in the world, is to be found at Sperenberg, in Lusatia, Germany, at the salt region of that place, where a depth of four thousand feet has been attained.

## Oil Brokerage—Its Commencement, &c.

J. T. Henry included in his book an article written by Arnold Burgess. It presents a good explanation of the operations of oil exchanges and is reprinted from Henry's *The Early and Later History of Petroleum* (Philadelphia, 1873), pages 279-282.

To a visitor in the oil regions, not the least interesting as well as surprising feature is the brokerage business. A stranger to the section and the trade, calling at the exchange, seeing the number of brokers and dealers engaged, and these augmented on the arrival of every train, the constant coming and going of telegraph messages, and listening to the terms used, finds himself in a *new world*, where thousands on thousands of dollars' worth of property changes hands with an indifference and ease which astonishes and bewilders him.

In 1868, brokerage was started by a few individuals, and for some time was chiefly confined to buying for refineries in Pittsburgh, Philadelphia and Baltimore. In most cases the brokers were paid by the buyers a commission of ten cents per barrel, and this was sometimes increased by an additional five cents per barrel by the seller. At the outset the business was a matter of experiment, but soon the attention of other parties was attracted thereto. New men entered the ranks, and the whole thing was placed on a legitimate basis by the formation of brokers' boards in the cities where the heaviest trade was carried on, and the establishment of regular rates of brokerage.

In 1869, Erie "cornered" the market, and by the large transactions in crude on the creek, influenced the refined markets of New York and Cleveland, thus bringing them in, as extensive buyers and opening these important points also to the brokers. Since that time, with each succeeding year they have assumed a more important position in commercial circles, till now all over the country, wherever oil is produced or shipped, either crude or refined, the greater part of the transactions are executed by brokers. A broker's business consists of buying and selling "spot," "regular" and "future" oil. As these are expressions which will convey to the uninitiated no idea of the particular trade named, a few words may be appropriately given in explanation: "Spot" is the term used when the oil is to be moved and paid for immediately; "regular" is where the buyer is allowed ten days in which to put in his cars and take out the oil. These are *parol* contracts and without writings, the broker acting under orders from his principal, whom he names to the other party, and he being often



the only witness to the trade; but in the case of "futures," this is not the custom, as the fulfillment of these takes place at the expiration of the agreed time. A written contract is drawn by the broker and signed by him as such. This is accepted by both parties, and is equally binding, the one agreeing to *sell* and the other to *take* a certain quantity of oil within a certain period of time, at a price named in the contract, which also specifies that the party, in whose favor the contract be drawn, shall give to the other ten days' notice, within which he will move the oil. Regular future contracts are *buyers'* and *sellers'* options. In the first, the buyer has a right to demand the oil at any time he sees fit; and by the last, the seller can put it in whenever he chooses, all within the time as named in the contract. By these contracts the buyer is also bound to take the oil or pay, or take a difference in money according as the trade has proved in his favor or against him, and this difference is that between the contract price and the regular market rate on the *last* of the ten notice days.

I have spoken of these as *regular* contracts, because there is a species of contract by which the amount of difference is named and limited at the start. These are called "puts" and "calls."

A "put" is where one party agrees to give a certain sum of money—to be paid at once—for the privilege of delivering a named quantity of oil at a price also named, within an agreed time.

A "call" is when the money is paid for the right to call on the other to deliver the oil. In these cases the prices of the "put" or called oil is generally higher than the rate of regular contracts for the same time. This is because it is a one-sided affair—since under no circumstances can the acceptor of the offer get more than the amount bid, while if the market goes against him, he is obliged to settle the difference at what may prove a heavy loss.

In all regular contracts the seller pays the brokerage; but in these irregular trades there is yet no established custom as to which of the parties it is due from. In New York the commission is three cents per barrel; in Oil City and on the Creek it is two-and-one-half cents. There is, however, one obstacle in this business to which brokerage in other commodities is not liable. I refer to the fact that in all futures the broker has to wait for the fulfillment of the contract ere he can collect his commission, and if either party fails, he loses his pay. By this he is actually made to insure the solvency of both parties to the amount of his brokerage, which is a manifest injustice. His business ought to end with the issue and acceptance of the contract,

and though it is customary for brokers to attend to the taking or delivery of oil for their principals, they get no additional pay for this extra work.

In a business like this, the market is liable to great and sudden fluctuations. A combination is often formed to lower or raise the price of oil, and this is especially the case as the time approaches when a number of contracts mature. The bulls and bears are then rampant, and the talk is all of the "long" and "short" order. The close of the first, and last half of the year, is generally marked by some such struggle, and the brokers buy and sell thousands of barrels of "paper" oil, to effect settlements of the six months' contracts that are coming due.

Brokers are, by the nature of their business, very closely connected. Each has his correspondent "on the Creek" and elsewhere, with whom he shares the brokerage arising from the purchases or sales made through their joint exertions; and it often happens that each broker is obliged to call in the oil of another, till the commission is so divided and sub-divided that it will hardly pay the telegraph bills of the different parties. In fact, brokerage, is a hard-worked and poorly-paid profession, and yet there is an excitement about it that forms a great attraction. The men are a jolly, jovial set, free and generous with their money and kind offices, and as their's [*sic*] is a business where much is of necessity left to their honor, each man takes a pride in keeping his word on an equal footing with his bond.

Efforts are constantly being made to place brokerage upon a still higher and more responsible footing. During 1871, by the exertions of prominent men identified with the trade, regular exchanges were established both in Titusville and Oil City. The members of these are bound by the most rigid laws of equitable trade, and by a wise arrangement of arbitration committees, very much litigation is avoided. Within these halls of exchange, all possible aids to business are gathered.

Every facility is offered by telegraphic communication with both home and foreign markets for a thorough and accurate knowledge of the condition of affairs. Membership is not limited to brokers; but dealers, producers and consumers are admitted to the benefits thereof, and meet on the same footing. By such an arrangement, the best interest of all are consulted, buyers and sellers are brought together, and the brokers, through whom this is effected, take their rightful position before the world as a useful and honorable body of men.

## Pipe Line Transportation

The importance of the oil pipe lines can hardly be overestimated. The lines changed the entire transportation aspect of the oil business, and were instrumental in lowering all transportation costs. A brief report of the earliest pipe lines was made by Henry E. Wrigley, who prepared a *Special Report on the Petroleum of Pennsylvania* (Harrisburg, Pa., Second Geological Survey, 1875), pages J. 56-J. 59.

*Pipe Line Transportation. Pipe lines, their construction and capabilities, comparative value of this method of transportation.*

The first producing wells being found upon the flat land of Oil creek and the Allegheny river, the removal of the product was not a matter of great difficulty; flat-boats loaded with oil in barrels and sometimes in bulk, conveyed the oil down stream to the nearest railroad. The railroads gradually extended their branches along the valleys of the region in all directions, but the oil produced from inlying valleys or remote spots, had to be conveyed in barrels by team from the wells to the dump tank at the shipping station, often a distance of ten or twelve miles, and at a cost of as much as three dollars per barrel.

To remedy this, it was natural to turn to the conveyance of water in pipes as an example, and in consequence a four inch cast iron pipe with leaded joints, was laid in 1861 from Titusville, four miles down the creek.

Owing undoubtedly to its imperfect construction, it leaked so badly under the slight pressure to which it was subjected and was such an alarming failure, that all projects of the kind were abandoned until the year 1865, when Mr. Samuel Vansyckle conceived the very happy thought of extending the tubing of the well as it were, to the station desired, however distant, and laid the first line of two inch tubing six miles in length, from Pit-hole to Miller farm, having two intermediate pump stations which were subsequently abandoned as unnecessary.

The mechanical success of this line soon caused the matter to be taken up by others, and the length and capacity of the lines extended over the upper, and finally over the lower region, until at present the net work of pipes which, like the veins of a human body, extends throughout the entire country, reaches with the branches to the wells, the enormous aggregate of nearly two thousand miles.

Without intending to specifically describe the extent and capacity of the several lines, it is desirable to direct attention to the peculiar and unexpected advantages of this mode of transportation, and to note the discovery of some valuable facts concerning its economy and the possible range of its usefulness.

There are to-day, in the oil region, fifteen separate companies engaged in the transportation of oil by pipe from the wells to the railroad.

*The Octave Pipe Company* gathers up the oil from the wells of Church run and Octave districts, and loads at Titusville.

*The Church Run Pipe Company* is confined to the wells at Church run, delivering at Titusville.

*The New York Pipe Company* has a main line from Tidioute and West Hickory through the new London, Colorado and Enterprise districts, 13 miles, without relay; also a line from West Hickory to Garland, on the Philadelphia and Erie railroad, 15 miles, with a relay pump station half-way.

*The Titusville Pipe Company* has a line from Pit-hole through the Shamburg and Pleasantville districts to Titusville, eleven miles.

*The Pennsylvania Transportation Company* has a net work of lines about 150 miles in length, draining the Pit-hole, Pleasantville, Shamburg, West Hickory and Octave districts, shipping at Titusville, Miller Farm and Oil City. The line from West Hickory to Titusville pumps thirteen miles without a relay. The company also operate a ten mile line and connection in the lower region, from Millerstown to Brady's Bend.

*The Rochester and Oleopolis Pipe Company* has the only successful gravity pipe line ever put in operation; it is six inches in diameter, and formerly delivered the oil from the Pit-hole district to the railroad at the mouth of Pit-hole creek.

It has also a line laid from Oleopolis over the hill to Oil City, which is an ordinary 2 inch line.

*The United Pipe Lines* reach almost every part of the lower oil region, and aggregate over 500 miles in continuous length. Their main lines are from Turkey run, at the head of the great lower oil belt, to Oil City; from Modoc and Fairview to Raymilton, on the Jamestown and Franklin railroad, over 22 miles; from Karns City, Millerstown and Greece City to Harrisville, on the Shenango railroad, three lines, twelve, fifteen and sixteen miles each.



*The Union Pipe Company* is side by side in length with the United Pipe, draining the entire lower region by innumerable short lines to the Allegheny Valley and Pittsburg railroad, and shipping to Butler and Coyle's station, on the West Pennsylvania railroad, by main lines of fifteen miles in length; the total continuous length of main lines, and connections, being more than 500 miles.

*The American Transfer Company*, from Upper Turkey Run to Emlenton, has about 50 miles of main line and connections.

*The Antwerp Pipe*, and the *Oil City Pipe*, extends from the Petersburg district to the Allegheny Valley railroad, and to Oil City through the Sandy district.

*The Grant Pipe Company*, from the Grant farm above Parker's landing, delivers on the river, and is 30 miles in continuous length.

*The Relief Pipe Company*, from Story farm and Armstrong run, also delivers at the river, and is one of the most prominent routes of transportation for the oil in the lower region.

*The Columbia Conduit Company* is the forerunner of a formidable competition of the pipe line, as a means of transportation, compared with a railroad, and its main line of three inch pipe extends from Millerstown, Butler county, to the mouth of Deer creek, above Pittsburg, on the Allegheny, a distance of 37 miles, having two relay stations on the route; the connections, from the receiving tanks to the wells, will probably add forty miles more. All these pipe lines are shown, in detail, on the published maps of the region.

#### *General Construction.*

The tubing in common use for well and shipping purposes, is made of wrought iron plates, of number 6 or 7 wire gauge [*sic*], heated in a furnace and closed around a cold iron core; the joint in the lap-weld tubing being formed by passing it, while hot and soft, through a series of rollers, which first turn up the edges, and then press or weld them down upon each other.

In butt-weld tubing, the edges are simply heated to a white heat, and then rolled together.

Tubing, to be merchantable for oil purposes, must stand a test of 1,200 lbs. per square inch of internal pressure, a strength which is attained only by lap-weld.

In a pump for a pipe line, the essential elements are a long stroke, a small oil cylinder, and a large steam cylinder.

The air chamber also of the pump must be proportioned to the work of the line, for the capacity of the pump is substantially the capacity of the line. There should be no obstruction in the line, especially at the point of delivery; a simple bend of the pipe at the receiving tank will add many pounds of pressure to the pump.

All the stop-cocks and connections should be free way stop-cocks. If the passage through the plug of a cock is but two-thirds of the sectional area of the pipe, for all the purpose of a pipe line, the diameter might as well have been just that much reduced.

The experience acquired in the construction and management of pipe lines in the oil region, has shown the comparative economic value of this method of transportation to exceed all others yet devised. Whether this fact is applicable in any way to our advantage, in the face of existing arrangements, or the uncertain life of oil production, may be left for subsequent examination.

## Address to Producers of Petroleum

To the amazement of many oil producers, production finally became so much greater than demand that crude oil prices fell drastically. Scattered, not unionized, often suspicious of each other, the producers finally organized the Petroleum Producers' Union in an attempt to better conditions. In the following address, the first part of which, pages 3-7, is reproduced here, the Union tells its members of the problem and the proposed solution. This was issued by the General Council of the Petroleum Producers' Union (Titusville, Pa., 1878).

CHAMBER OF THE GENERAL COUNCIL OF THE  
PETROLEUM PRODUCERS' UNION  
TITUSVILLE, JULY 13, 1878. }

### *To the Producers of Petroleum:*

The General Council of the Petroleum Producers' Union, which is composed of representatives from every district in the Pennsylvania Oil Region, was established for the purpose of promoting, by all just and proper means, the general interests of producers.

The Council assumed its duties with a full appreciation of its responsibilities. The magnitude of the Petroleum business, which is daily increasing, its actual and possible value to the country and to those engaged in its prosecution in various relations, have stimulated the Council to a careful study of the causes which depress its pros-

perity and the possible methods which have been suggested for its restoration. The consideration of these subjects has done much to correct erroneous opinions which have generally prevailed, and to make clear the way for a deliverance of the business from the condition in which it has been placed by the irrational course of producers, not less than by the unjust and unnatural restrictions placed upon it by those who seek to monopolize its control.

Upon these subjects the Council has reached well-settled conclusions. It is evident that there is no remedy for evils existing or threatened without the hearty co-operation of producers, and that with such co-operation, it will not only be practicable but easy to correct any mistake, remove any abuse, and accomplish any desirable and proper result. For the purpose of inviting, and with the hope of securing, this desired and necessary co-operation, the General Council at its session just terminated, has directed its President and Executive Committee to issue an address to all producers, whether they are within the present Unions and associate organizations or not, calling attention to the existing causes which depress the business, suggesting the various possible remedies, and urging all producers to unite in a rational and effective effort to improve the condition of the trade.

In discharge of the duty thus imposed upon them they ask your consideration of the suggestions embodied herein.

#### RELATIVE IMPORTANCE OF THE PETROLEUM BUSINESS.

The Petroleum business, although new, has attained a position as one of the leading industries of the country, but its absolute and relative importance has never been fully understood, even by the most appreciative observers. Petroleum already ranks as third in value among our articles of export—being exceeded only by cotton and breadstuffs. Its production rivals in importance even that of the precious metals. For the year ending June 30th, 1873, when the price of Refined oil was very low, the value of Petroleum produced and exported from a few square miles of territory exceeded all the gold and silver deposited at the United States mints and assay offices, as the product of all the States and Territories of the United States. Great as is its value, shown in these exhibits, it is not one-half its intrinsic value, nor one-half of what might be rightfully realized for the production without restricting consumption or doing injustice to the consumer.

## THE PRODUCING BUSINESS NOW UNPROFITABLE.

You now produce 40,000 barrels of Crude oil daily, worth at present prices, an amount insufficient to cover the cost of machinery, labor, fuel, and material used in drilling and pumping wells, and the intrinsic value of territory exhausted in producing this daily aggregate. This latter item is a part of the expenditure or waste, for the oil taken from the land is not replaced as spring water may be, but is such a waste and reduction of value as the consumption of coal, iron or forest timber. For a product which is confined to so limited an extent of territory, at least a fair compensation should be realized for the property consumed, and the risk, labor and expense of producing it. But the fact is, that the vast Petroleum business of Pennsylvania is now being conducted at an actual loss to the producers of the crude article, who take all the risks, while it is yielding a large profit to the middlemen, whose services as transporters, refiners, merchants and brokers are required in preparing [*sic*], forwarding and marketing the product, which service is rendered without risk. It is wholly unnecessary that the business should be conducted at a loss to the producer, however inseparable it may be from risk.

Petroleum is unrivaled, not only for excellence but for cheapness, at a price far above that now realized, and the imperative requirements of the world will absorb a constantly increasing amount at a price which will render ample compensation to every necessary industry concerned in its production, manufacture and distribution, and leave a balance for the producer sufficient to yield an adequate compensation for all his labor, expense and risk, and a magnificent return for the exhaustion of his property.

## CAUSES OF DEPRESSION.

What are the causes of the present depressed state of the business?

*First*—The most evident is the excessive over-production.

*Second*—The sale of the entire product as obtained without regard to the world's demand, so that the surplus having passed from the control of the producer becomes the rival and antagonist, in the market, of his daily production.

*Third*—The use of the surplus by the buyer to render him constantly independent of the producer for his required supply, and to enable him to fix the price of an article which he is compelled to purchase.



*Fourth*—The manipulation of the stocks by speculators and buyers to depress prices to suit their purposes, which are always adverse to the interests of producers.

*Fifth*—The monopoly of storage and transportation facilities which are used by the buyers of Crude oil to control prices and to discriminate against the interests of the producers.

*Sixth*—The only material competition in the trade is between the sellers instead of between the buyers; whereas, with a production confined to such a restricted area, and a demand for consumption from every quarter of the globe to be supplied, the competition should be between the buyers instead of being between the sellers.

*Seventh*—The lack of reliable information on the part of producers generally regarding the actual condition of the business both as to production and consumption.

*Eighth*—The speculators, taking advantage of this ignorance of producers, and their helplessness to protect the price of their commodity, make it the football of speculation, depressing and elevating it without regard to the effect of their manipulations upon the vital interests of the producers.

### REMEDIES TO BE APPLIED.

The causes enumerated suggest that among the remedies should be included the following:

A restriction of production within reasonable limits; a withholding from the market of any amount which may be in excess of the world's demands; the retaining in the hands of the producers of the control of the surplus stocks; the control by the producers, instead of the refiners, of storage facilities; the securing of equality in transportation; the lessening of competition between the sellers, and the increasing of competition between the buyers of the Crude article; the fixing of less variable prices in Petroleum by such means as will make it impracticable for speculators to manipulate the price for purposes of speculation merely; the acquiring by producers of facilities for storing and shipping their own product, thus increasing their financial power; the creating of more unity of purpose and effort among producers; the investing of the accumulated stocks with a power to be used for the benefit instead of the injury of the producing interest.

Producers may blame whomsoever they will for the depressed condition of the business, the fault rests first and last with themselves;

and the chief and primary cause of the depression of their business is the great over-production.

## Torpedoes

Colonel E. A. L. Roberts invented the oil well torpedo while serving in the Union Army during the Civil War. He applied for a patent in November, 1864. In January, 1865, he arrived in Titusville with six torpedoes. Captain Mills finally permitted him to torpedo one of his wells located on Watson Flats near the village. The experiment was a success and increased the production of the well; the demand for torpedoes grew steadily. John F. Carll, the geologist in charge of the survey of the oil regions, provided the best description of torpedoes in his epic report *The Geology of the Oil Regions of Warren, Venango, Clarion, and Butler Counties* (Second Geological Survey of Pennsylvania, Harrisburg, 1880), pages 327-329.

The torpedo as first used consisted of a simple tin case or shell filled with gunpowder, and having a percussion cap fixed in the upper end of the case in such a manner that a slight blow upon it would cause an explosion. It was lowered into the well by a cord or wire, and held suspended at a point in the sandrock where the oil was believed to enter. When in proper position, a cylindrical weight through which the wire passed, was dropped from the well-mouth, and guided by the wire, fell upon the cap and exploded the charge. The water in the hole acted as tamping, confining the effects of the explosion to the immediate vicinity of the torpedo, and thus excellent results were obtained.

Since then every kind of explosive has been employed, and every device which ingenuity could invent has been tried by parties endeavoring to introduce rival torpedoes without infringing upon the first patent. But all these efforts have failed. The Roberts' patent has been sustained in every contest in the courts and the original torpedo with such improvements as practical experience has suggested is the only one now in use.

But nitro-glycerine has been substituted for gunpowder, dynamite, and other explosives, it being more easily introduced and more certain in its effects. The charges exploded in deep wells to-day are enormous when compared with those of a few years ago. Formerly a shell holding from two to ten quarts was considered a good shot, but now from thirty to sixty quarts (100 to 200 lbs.) are required. The shells or cases containing the explosive are sometimes over twenty feet long; but

large charges are generally inserted in sections. If, for instance, the oil sand is thirty feet thick, and it is desired to cover the whole of it with one explosion, the process will be something like this: Take a case, say fifteen feet long, and attach an "anchor" on the bottom corresponding in length to the depth of the well-pocket below the oil sand. Introduce the case into the hole, and holding it suspended at the well mouth, fill it with water. Then pour in the nitro-glycerine until the water has been displaced and the shell is full. Lower this carefully by the torpedo wire to the bottom of the well and unhook from it, thus leaving it standing upon the bottom and covering the lower fifteen feet of the sandrock. Now fill another shell in the same manner, and in the top of it affix the device containing the percussion cap to explode the charge. Lower this also into the well, and when it rests upon the one already put in, unhook the wire and withdraw it.\* Nothing now remains to be done but to drop into the well a weight made for that purpose and—*run*; for sometimes these explosions, even at a depth of 1800 feet or more, are followed by a discharge of water, oil, mud, and broken rocks—some pieces of which are nearly the full size of the well-bore—which shoots up higher than the top of the derrick, and makes it disagreeably exciting to those who happen to be too near when the miscellaneous shower comes down. With nitro-glycerine the firing of one charge explodes all the others in the well, and hence a large surface of rock can be covered by it with more ease and certainty than it could if any other explosive were used.

The simplicity of the torpedo, and the method of introducing and exploding it, and a desire to evade the payment of the large profit or royalty demanded by the Roberts' Torpedo Company, (but which royalty, after all, does not seem so extortionate when the immense advantage the invention has been to the oil producer and the extremely hazardous nature of the business are taken into consideration,) have induced many well-owners to buy the materials and prepare their own torpedoes. These are secretly put into the wells at night by professionals called "moonlighters," who follow the business of inserting them, charging from five to ten dollars for their services. But this kind of work generally ends in an injunction from the court, and a costly settlement with the torpedo company.

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\* In cased holes containing but little fluid, it is necessary to withdraw the wire before the shell is exploded, otherwise it is driven up into a wad and destroyed. In this shape it may lodge somewhere in the well and cause considerable delay in removing it before the tubing can be inserted. [Author's note.]

Another shrewd way of defrauding the patentee has been practiced to a considerable extent by using what has been appropriately named a "sleeper." An operator orders from the torpedo company a small ten-quart shot, to be put in on a certain day, "just to stir up the well a little." He then procures a case and say thirty quarts of nitro-glycerine from some of the "moonlight manufacturers," and secretly lowers it to the bottom of the well some time during the night previous to the day appointed. When the company's agent arrives everything is in readiness for him, and he quickly shoots off his ten-quart shell and goes away, little thinking that he has exploded forty quarts of nitro-glycerine in the well, while the company receives their royalty only on ten.

### [Secret Agreement Among Drillers]

So carefully did the owners of Cherry Grove's "646" mystery well, located in Cherry Grove Township, Warren County, guard their property that they had the drillers sign a secrecy agreement on March 7, 1882, before the well struck oil.

Speculators on the oil exchanges, other large producers, refiners, and major oil companies all thought it important to have news of large wells in advance of their competitors and employed agents to scout activities. There were so many of their representatives in the vicinity of the "646" well that the group was given the name of "the oil scouts" for the first time.

This unusual secrecy agreement was owned by George H. Dimick, Jr. and Thomas E. Dimick, sons of George H. Dimick, who, with Captain Peter Grace, constituted the Jamestown Oil Company, owners of the well.

In 1951 they presented the agreement, along with their father's scrapbook pertaining to "646," to the Warren County Historical Society, Warren, Pa. It is published here for the first time, with the permission of that society.

Warren County                    }  
State of Pennsylvania } S.S.

Personally appeared before me David Brennan a Justice of the Peace in and for said County John B. Barr, S. F. Karnes, R. G. Thompson and F. W. Chase who being duly sworn according to law do depose, promise and say: That such information as they may hereafter obtain, as employees or otherwise of the future developments of the well now being drilled by the Jamestown Oil Co. on Lot No. 646, Warren Co. Pa. shall be held by them the said deponents secret



and inviolable, That they will not by either act, word, deed or other manner convey to any other person, excepting G. H. Dimick, Supt. of said Company any intelligence of the depth, nature or character of said well: and that they will not do, act or say any thing or things, by or through which any inference or supposition can be formed on the part of any person as to the depth of said well, the character of its oilbearing rocks; or its value or worthlessness as a producer of oil[.]

Deponents further depose and say that they will use all reasonable efforts under the direction of said Dimick to prevent any and all other persons from obtaining information on the points above named; That they will not retain in their possession or give to any other person any sample of sand obtained from said well; and that they will in short, do any and every reasonable thing, said Dimick may require for the suppression of information concerning said well until formally released by him from this obligation.

Sworn and subscribed before me at said well in Cherry Grove Tp this 7<sup>th</sup> day of March, 1882,

D. W. Brennan, J. P.

J. B. Barr

S. F. Karnes

R. G. Thompson

F. W. Chase

## Striking Oil [Cherry Grove]

In 1882 the great Cherry Grove field, in Warren County, roared into being with a new flood of oil; it was perhaps the greatest oil excitement in the entire history of Pennsylvania petroleum. The whole boom, from discovery, the drilling of hundreds of wells, the race of pipelines into the field, the building of several towns, and the collapse of all, took place within a period of less than eight months! The damage it did lasted much much longer. E. V. Smalley told about it in his article, "Striking Oil," which is reproduced here in part from *The Century Magazine*, July, 1883 (Vol. XXVI, No. 3), pages 327-329 and 337.

For sudden and enormous effect upon values, the Cherry Grove excitement of last summer was without parallel in the history of the petroleum trade. It surpassed the famous Pithole furore of 1865. Cherry Grove is a wilderness township of Warren County, which, prior to last May, was almost uninhabited, its population consisting of half a dozen farmers and a few tan-bark cutters. On election night, the politicians at the county seat used to know exactly how the

township would vote, and did not need to wait for the returns from that quarter when figuring up the result. For many years the vote stood twelve Republicans and two Democrats. Nearly in the center of the township was a little clearing embracing a few farms; all the rest was a dense, primeval forest of hemlock and birch, where so little light penetrated the canopy of interlaced branches that it always seemed after sundown. About ten miles from the clearing lay the little oil town of Clarendon, on the Philadelphia and Erie Railroad,—a pocket-field, as the oil men call it, developed about ten years ago, and containing about two hundred wells within sight of the railway station. The “wild-catters,” as the prospectors are called who take the risks of sinking wells in unknown territory, had long had a theory that oil would be found south-west of Clarendon; but it was only in the spring of 1882 that a party of four of them ventured to put up a derrick in the clearing in Cherry Grove and began to drill. There seemed to be a premonition in the oil exchanges of the tremendous consequences to follow the sinking of 646, as the well was called, from the surveyor’s number of the lot upon which it was located. Its progress was observed with feverish interest. The leading oil brokers of Bradford and Oil City employed scouts to watch it after the hole had got down nearly to the depth where it was expected the oil-bearing sandstone would be reached, and to make daily reports of its condition. The owners boarded the derrick up and stood guard at night with shot-guns, firing at random into the woods to keep the spies from getting near enough to learn anything. In spite of these precautions, one young man managed to evade the guard, and, crawling up to the well in the night, concealed himself under the derrick floor, where he lay for seventeen hours, escaping at last with the precious knowledge that 646 was a flowing well—knowledge which, it is said, brought fortunes to him and to the brokers who employed him.

When at last the mystery about the Cherry Grove well was cleared up, and the fact was established beyond dispute that it was spouting out the largest stream of oil that ever came from a single well,—actually yielding four thousand barrels the first day,—the effect was tremendous. It is estimated that in a few days’ time the value of oil on hand and of oil territory and wells suffered a shrinkage to the enormous amount of thirty millions of dollars. Crude petroleum, which had been selling at eighty-five cents per barrel, tumbled down and down and down until it got to forty-nine cents—a figure far below the cost of production by any except big-flowing wells. The reader will ask why the opening

of a single well, even though it produced the prodigious yield of four thousand barrels a day, should have been followed by such serious results. The answer is, because every one in the oil regions knew that it was not a question of one new well but of a new producing district, and that scores and perhaps hundreds of other wells would soon be flowing within gun-shot of 646.

In a few days the hemlock woods of Cherry Grove township were alive with men and teams, hauling boilers, engines, drilling-tools, lumber for derricks and shanties, kegs of beer, boxes and barrels of provisions, furniture,—all the equipment, in short, of a new settlement. It was May 17th when 646 struck oil. Before the end of June, two bustling towns had sprung up near by,—one called Garfield, in honor of the martyr president, and one Farnsworth, for the owner of the farm where the wonderful well was sunk. Land that had lately been sold at four dollars an acre to pay the taxes changed hands in five-acre tracts at from \$500 to \$1000 an acre. Hotels, stores, machine-shops, saloons, and a theater sprang up as if by enchantment. The forest aisles, but lately sunk in the silence of centuries, resounded with the shouts of teamsters, the clatter of machinery, the clinking of sledges upon anvils, the sharpening of drills, and the noise of saws and hammers. By the first of October, three hundred and twenty-one producing wells had been sunk in the Cherry Grove territory, each well representing an average expenditure, for engine, derrick, boring-tools and equipment, of three thousand dollars. Thus, over a million of dollars was spent in four months' time upon a little strip of Pennsylvania forest and clearing two miles long by half a mile wide.

The wells that struck oil soon after the great success of 646 all yielded heavily, with the exception of a few that were sunk outside the narrow producing belt, and that served, by their dry holes, to define the limits of the belt. A thousand-barrel well was no wonder in those exciting days, and a man whose well only spouted five hundred the first twenty-four hours after he struck the oleaginous stratum thought he had but moderate luck. But as new wells were put down the flow of the older ones steadily decreased, under a law that governs all newly opened petroleum districts. There is only a given quantity of oil in the ground under pressure of gas, and the more the subterranean reservoir is pierced, the less powerful is the gas pressure, and the flow from each aperture is necessarily diminished. In August, the Cherry Grove field produced forty thousand barrels a day; but from that maximum it steadily declined, and when I visited it in October,

the total daily yield from all the wells was less than the yield of 646 during the first twenty-four hours after it commenced flowing. Many wells were abandoned, and the tools and machinery were being removed to other fields. Even under the discouragement of the rapid collapse of the district, however, new wells were being sunk. Probably the field will yield two or three thousand barrels a day for some years to come, from a hundred wells producing a few barrels each; but its importance has gone, and with it the fortunes of hundreds of eager speculative men, who rushed in to share the profits of the big strike. With its partial failure, however, the price of oil has gone up, and prosperity has returned to the whole petroleum country. When crude oil brings ninety cents or a dollar a barrel, everybody is happy; when it goes down to fifty cents, times are hard, and nobody wears a cheerful face save the speculators who have sold "short."

\* \* \* \* \*

A curious feature of the new settlements in the Cherry Grove district is the great number of shanties and sheds bearing the sign "Bottling Works." There are no saloons proper; but everywhere, on the dusty highways, at cross-roads, and in the woods, where there is a group of wells, this singular legend, "Bottling Works," greets the eye. The equipment of one of these establishments consists of two or three kegs and a dozen bottles of beer. No glasses are kept on the bar, and there are no seats for tired and thirsty wayfarers.

I stopped at one of these places and asked the proprietor, a decent looking fellow, to explain why he entitled his bar a bottling works instead of a beer saloon. He replied that the Pennsylvania license law empowered the courts to grant licenses. When oil was struck in Cherry Grove, the court in Warren county was not in session and would not sit for six months. Meanwhile, what should the thirsty multitude that rushed to the new field do for something to drink? Somebody remembered that there was a law authorizing every person who paid fifty dollars to the county treasurer to bottle ale or beer, not to be sold by the glass, and not to be drunk on the premises. The bottling works took shelter under this law. "You notice that platform in front of my house," continued the beerseller. "Well, it's not on my premises. The house stands right on the line of the public highway. When I sell a customer a bottle of beer, he don't drink it on the premises; he stands right here on the porch, and the porch is in the highway."



Just then a red-faced man, whose clothes were redolent of petroleum, called for a bottle, swallowed the beer, put down ten cents, and went his way. "Don't you give them glasses to drink from?" I asked. "No; that would be selling by the glass. I got some tin cups and used them for awhile, but concluded I might get into trouble. The court might hold the tin-cup dodge as an evasion of the law. As long as they drink the beer from the bottle, the law can't touch me." "Then the effect of the liquor legislation is that a man who would ordinarily be satisfied with a mug of beer must buy a whole bottle?" "That's what it come to, my friend."

## Primitive Processes and Purchasers

Here is given the story of pre-Drake efforts in making crude oil into a suitable burning oil, efforts to sell the resulting materials, and some of the earliest purchasers. This is from Allen Norton Leet's book *Petroleum Distillation and Modes of Testing Hydrocarbons* (New York, 1884), pages 17-21.

In the year 1859 after Col. A. C. Ferris had exhumed oil from salt wells at Tarentum and had perfected a lamp in which to burn the material after it had been distilled and refined by the writer for him, Mr. S. N. [M.] Kier, of Pittsburg, who had vainly endeavored to make an illuminator from the Tarentum crude petroleum, wrote to Ferris, asking the latter if he should be able to furnish a distiller and refiner who could make refined petroleum like Downer's famous product, to send any such person to him and he would pay well for the information. Mr. Chas. B. Holmes, who had been engaged in the petroleum works of Samuel Downer at Portland, Maine, and was familiar with that process, and who had a disagreement with Downer, was selected by Mr. Ferris and went to see Mr. Kier. That gentleman had a little four-barrel still in which his primitive operations were conducted, but from which he had been unable to obtain satisfactory results. Mr. Holmes succeeded in producing an article exactly similar to that made by Downer, and the Lucesco Salt & Oil Co., of Tarentum under the control and management of Mr. S. N. Kier was the first concern West to distill and refine petroleum successfully. For his services Mr. Holmes was paid the sum of five hundred dollars, and then he returned to New York.

In the following year, after Col. Drake's discovery, Mr. Holmes made a second trip west and got up a company of capitalists who started an oil refinery at Erie, Pa. From this nucleus sprang in

Pennsylvania and in Western New York the system of petroleum refineries which has since grown to such mammoth dimensions. With the production on the Hyde & Egbert, and Tarr farms in 1860, there arose almost like mushrooms in a night along the borders of Oil Creek, numerous small oil works, constructed, often in the rudest way, of a cast-iron still, a copper worm, tin or zinc-lined agitating tank, (which would probably leak after the first installment of sulphuric acid,) a tin-lined settling tank out doors (an impression then prevailed that it required sunlight to settle oil), and the most primitive appliances for agitating, consisting of a churn-like apparatus (ordinary wooden dasher and handles), operated by some colored man or stalwart laborer, working from a plank across the top of the tank until the fumes of sulphurous acid gas, set free by agitation, would cause the poor fellow to fall prostrate or throw down his implement in disgust. A few rough boards only fenced in the "refinery"; wood was used for fuel, a run that yielded fifty per cent. of oil represented three hundred per cent. of profit, and the naphtha and tar were cast away upon the surface of Oil Creek.

The two most pretentious refineries erected on a scale of magnitude deserving the name in those early days, were the Humboldt Works at Plummer, on Cherry Run, a tributary to Oil Creek, midway between Oil City and Titusville, and Downer's Works, erected at Corry in the year 1862. But before giving a description of these extensive refineries and the important discoveries and inventions in petroleum apparatus and products which were originated within them, and which formed the bases of the prevailing efficient modes and the resultant successful materials now in use, it is due to the pioneers throughout the country who first made purchases of refined petroleum in the earliest days and endeavored to introduce the new article to their customers, that their names should be placed on the record of enterprising tradesmen. When it is considered that nothing was known as to the luminosity of the oil by the public in those days, and prejudice, fear and natural antipathies had to be combatted, the temerity of those early dealers is greatly to be commended. They were the founders, the original purveyors of the article now sold for light in every grocery and oil store in the broad land.

Upon his first introduction of refined petroleum to the public as an illuminator, in 1857, A. C. Ferris, the pioneer in this effort, made a trip through the State of New York, the Eastern States and as far South as Georgia, taking with him samples of the new oil then called

by him "carbon oil," and a lamp in which to exhibit its illuminating properties. The following is a partial list of customers who, at that early date, made a trial of the oil, some to succeed, and some to reject it, and return it with expenses incurred upon his hands.

Stout & Hand, grocers of Gowanus, South Brooklyn, were the first actual purchasers of a barrel of the new oil at 70 cents per gallon, in December, 1857. Great was the encouragement derived from this sale. Alexander Muir, of Brooklyn, was induced to open a "depot" expressly for its sale in Myrtle avenue, near Fulton street, with the sign "Carbon Oil Depot" over his door, on January 26, 1858. His first outfit was 3 barrels, with lamps. He continued this business until May of the same year when he sold out to Abraham Sanger, now a very aged man.

Bailey & Douglas, of Charleston, South Carolina, gave their first order at their place of business for a small trial lot of oil and lamps in February, 1858. Their small invoice only amounted to \$110.63, for which they paid December 17, as it failed to be a success in Charleston at that time. Lyles & Polhamus, prominent wholesale dealers in oils, became customers in May, 1858, in New York City, and never ceased selling, themselves or through their successors, until the present day. Augustus Prout, of Geneva, New York, took a small invoice of petroleum as an experiment in December, 1857, and continued its use until the dissolution of the firm twenty-five years later.

W. Wheaton, grocer of Rye, Westchester Co., N. Y. was a purchaser of petroleum by the barrel in December, 1857, at 80 cents per gallon—barrel one dollar. The barrels were wood-hooped whisky barrels, prepared with a lining of shellac. Mr. Wheaton continued to sell until his death. Darius Hicks, of Providence, Rhode Island, at Mr. Ferris' personal solicitation at his store in Providence, tried a small invoice of lamps and oil on January 11, 1858, but could not succeed with its sale and later returned it with expenses incurred to New York, which expenses were repaid him.

S. G. Welling, druggist, of New Rochelle, N. Y. was a buyer of the petroleum by the barrel in December, 1857, at 80 cents per gallon. In December, 1858, he was still a regular customer at the price of \$1.50 per gallon, and he and his successors have been purchasers ever since. Col. E. F. Jones, of the famous Massachusetts 6th regiment which left some of its soldiers dead in passing through Baltimore at the outbreak of the war, was among the first buyers of illuminating petroleum in January, 1858. His first purchase was 10 barrels con-

taining 423½ gallons at 80 cents per gallon, barrels one dollar, total \$348.80. In February, 1858, he purchased for his Boston trade, 57 barrels, nearly 2500 gallons, at the same price. Col. Jones was also the inventor and patentee of a burner much used in the early days of petroleum. He was the founder of the retail and jobbing petroleum trade of the Bay State.

King & Troy, wholesale druggists, of Norfolk, Va., consented to try a barrel of the "carbon oil," which was shipped to them February 20, 1858. They continued to be regular buyers up to the breaking out of the war, and since the restoration of peace have become large dealers in that section. The original "Kerosene Oil Co.," of New York, organized to manufacture coal oil, with an office in Beaver street, and works on Newtown Creek, began to buy refined petroleum of A. C. Ferris, in March, 1858, paying for nine barrels of the oil, \$275.19, and for a barrel of residuum from the still, \$13.98. In April they bought 19 barrels of refined petroleum, paying therefor \$581.47. This was nearly one and a half years before oil was obtained on Oil Creek. Their successors are the mammoth oil refiners, known as the "King's County Oil Refinery" of to-day.

William Coffin, of Newburyport, Mass., began to buy "carbon oil" in March, 1858, and thereafter was a regular customer for a long period at even the highest prices the oil reached. His son is still the largest dealer in that section. David G. Greer, of Wilmington, North Carolina, opened a store solely to deal in the illuminating petroleum in February, 1858, and was a regular customer, making that his sole business until the war broke off communication with the north.

Sargeant, Dunbar & Co., of Boston, took two barrels for experiment, March 31, 1858, at 80 cents per gallon. They became thereafter regular customers. Now their successors are prominent jobbers in that city.



## The National Petroleum Exchange

Dealings in barrels of crude oil were confused and handled in many ways in the early days of the business. Gradually the methods were standardized and exchanges came into being. This is the story of the formation of a petroleum exchange in New York City—how and why it came into existence and how it operated. It is taken from John A. Dodge's book *Petroleum: Its Past, Present and Future in Commerce and Speculation* (New York, 1884), pages 14-18.

THE NATIONAL PETROLEUM EXCHANGE was organized in December, 1882, and its membership includes a large number of the most active and responsible men known in financial circles. The consolidation of the New York Mining Stock and the National Petroleum Exchange, followed in May 1883. The consolidated Exchange has brought into action the best material which moves in legitimate business, where the trading is not controlled by the premeditated manipulations of cliques and rate-cutting officials, and its membership is being daily reinforced by accessions from the most active members of the New York Stock Exchange.

Such an institution had become necessary for the oil-trade of the country. Previous to its organization the petroleum business was confined to very narrow and uncertain limits. Crude oil, for export, was dealt in at varying prices; the quality was uncertain, and the producers were subjected to the wire-pulling operations of a few men who were generally in the interest of the refiners; and refined oil was treated as a commodity which exhausted its interest from lack of attention from those moneyed men who, caring little, and knowing less, of the vast possibilities of the trade, sought other—and possibly less profitable—channels of investment.

Oil City and Bradford were the accredited oil centres. Prices which were flashed over the wires were uncertain and dangerous. New York stood aloof, from the fact that, where it should regulate, it was expected to follow, and the Wall Street financiers, who had withstood every stress and had seen the great commerce of the country governed by the operations in their midst, foresaw the time when the oil trade should find its centre at the tide-water point, and when every facility of situation and influence would be demanded in the great industry.

WALL STREET TOOK TO OIL, but distrusted and denied the right to supremacy of the fledgling Exchanges in distant places, and the establishment of the National Petroleum Exchange, supported by the in-

fluent men of the financial world, became a benefit to the trade and to the other Exchanges.

\* \* \* \* \*

THE SYSTEM OF TRADING is simple and secure. With every certificate made for 1,000 barrels, this minimum of an operation commends itself, as it enables a moderate investment to be made with the same advantages, proportionately, as accrue to large operators. The smallest recognized transactions on the Stock Exchange are in lots of 100 shares, and the margin necessary for such is \$500 to \$1,000. A small operator, who does not care to risk this amount, in a rapidly fluctuating or a demoralized and stagnant market, is necessarily at a great disadvantage. Not so in the Petroleum Exchange. The risk and burden may be made light, when the minimum of transactions is 1,000 barrels, on which the margin of 10 cents per barrel amounts to but \$100, while larger operators, by dealing in 5,000 or 10,000 barrels, or in larger lots, have the same—but no greater—facilities than those enjoyed by the more moderate trader, who adapts his ventures to his means and secures safety and profit by the ordinary business caution, which makes wisdom and care the road to success.

A commission of \$1.25 per thousand for buying, and the same for selling, and a carrying charge of fifty cents per diem on each 1,000 barrels—being the stipulated charges for storage paid to the Pipe Line Company—with the charge of six per cent. interest on the difference between the cost of the certificate and the margin deposited, is the basis of operation. There is simply this, and nothing more, and a short sale, which is often advisable and may be prudently made, with a greater prospect of quick profit, incurs no charge for carrying or interest.

The rapid fluctuations frequently enable operators to open and close transactions in a day, with a profit, thus avoiding any charge whatever for storage or interest.

This is, in brief, the PAST AND PRESENT of the oil trade. Its future is only to be judged by its past, and we venture the prediction that, as its advantages become more widely known, its growth will be more rapid than ever.

The New York Stock Exchange has, until recently, almost monopolized the attention of the speculative community; but now that Wall street has seriously turned its attention to oil, it is apparent, to even the most casual observer, that the Petroleum Trade is certain

to be, for a long time, the one great medium for legitimate speculation—not the speculation of the lamb endeavoring to escape from the clutches of the wolf—but speculation in its broadest sense, speculation where brains and ability are potent factors and where judgment and discretion may tend to achieve success and prevent failure and disaster.

## Two Model Refineries

Early refineries were crude affairs to say the least. As methods improved, refining plants improved also and Allen Norton Leet described the better plants in the following extract from his treatise titled *Petroleum Distillation and Modes of Testing Hydrocarbons* (New York, 1884), pages 22-26.

The abundance of crude petroleum, as indicated in the year 1862 by the increased production, led to the erection of the first works of magnitude in the oil region—the Humboldt works at Plummer, midway between Titusville and Oil City. The plan was first conceived by Mr. Bruns, an energetic and cultured German, who associated with him Mr. Ludovici, a banker of Wall street, in New York. It was determined to make the refinery a model one, and, in view of the numerous conflagrations which had played havoc with many smaller refineries, as far as possible to make it safe. About twenty acres of land were purchased and the construction of the works was begun. The general plan was carried out under the supervision of James Faulkner, a brother-in-law of the Peruvian-American millionaire, Mr. Meigs, and the detachment of the several buildings was one of the principal features of the plan.

Located near the center of the grounds, contiguous to each other, were twenty stills. They were constructed of boiler iron with their sides three-eighths of an inch, and the bottom or fire plates, one-half an inch thick. They were horizontal, with domes on top from which cast iron pipes extended about 300 feet in a trough of water with a slight descent for condensation purposes. This plan operated quite as well as the circular worms, and having no turn, the pipes were susceptible of being examined or probed with iron rods whenever, as frequently happens in excessively cold weather, suspected or actual stoppages occurred in them from ice or other causes. This plan also operated to make the discharges from the still far enough removed to avoid any danger of contact between escaping and uncondensed vapors and the fires. A long raised platform extended along the whole line of the

outflow. The distillate flowed into small tanks, from each of which two pipes, arranged with metal plugs, depended. One of the pipes led to an immense naphtha tank, and the other to iron distillate tanks beneath the platform. These latter were connected by a four-inch iron pipe which extended along the whole front, and led to an underground iron distillate reservoir whence the contents were pumped, when deemed necessary, into the "treating house" or refinery.

This latter was situated by itself. It was five stories in height. Upon each floor was an iron tank with outlet into the tank beneath. From the lower or first-story tank, pipes led to an isolated building five hundred feet distant, which contained iron settling-tanks. The stills were set in the most approved style, so that not more than three per cent. of paraffine oil was obtained. The latter was permitted to flow into the naphtha tank for purposes soon to be explained. The stillmen communicated on the platform to the firemen in front of the stills by means of bells and speaking tubes. About seventy-five per cent. of the yield was illuminating distillate. The mode of refining was to pump about 2,000 gallons at a time from the distillate tank into the semi-circular tank on the top floor of the refinery.

The water was carefully withdrawn, and then the engineer was signaled by bell to start the agitator. The writer was the refiner, chemist and distiller of the works. The mode of agitation was by air pressure. A powerful air pump in the engine house five hundred feet distant—supplied by means of a pipe which could be opened into each tank as desired—furnished the necessary agitation of the oil. Having got the distillate into satisfactory turbulence, sulphuric acid was applied, and the whole body kept in motion until the proper assimilation of the acid with the resinous properties of the distillate, when the signal would be given to the engineer and the agitation would cease. After the acid pitch had been withdrawn, the whole body would be drawn into the next tank below, where a thorough washing with water would take place. After the water had been withdrawn, the oil would then be let into the next tank below, and here the application of the caustic soda solution would be made; after the soda had been withdrawn the oil would again flow into a lower tank where the oil would again be washed and agitated. Then, after the waste water had been withdrawn, the oil was permitted to run into the pipes that led to the settling tanks.

The use of these separate tanks for each separate purpose was found to be of benefit, as it prevented the possible discoloration of



the oil by foreign substances. The tank that was used for the sulphuric acid was used for that alone. There was no possibility of acid pitch being in the tank where the oil was washed, and so with the other tanks. In regard to the use of forced air for agitation, experience has taught the writer that while it more completely keeps the oil in motion, its use is not so satisfactory generally, as the operations of well-constructed propellers moved by a crank shaft. When the air happens to be damp, the moisture is carried into the tanks by the air pump, and, if no actual chemical change occurs by the introduction of the hydrogen in the tank where sulphuric acid is in use, the power of the latter is enfeebled by dilution, and results are therefore not always satisfactory. Additional acid has frequently to be employed.

From the "settling house," where the oil was barreled, a tramway extended one thousand feet or more to a large shop where old barrels were re-coopered, or new barrels were made. Crude oil was supplied to the stills from two immense oil tanks situated on a hill overlooking the refinery. It ran to the stills by its own gravity. An efficient system of cocks at the tanks and on top of the stills regulated the flow when needed. The first pipe line ever laid was constructed from the Hyde-Egbert farm, three miles distant, to the crude oil tanks of the Humboldt Works; but when that territory ceased yielding, the pipes were taken up and connected with more profitable fields. In those days there was no railroad on the south nearer than Franklin (then supposed to be perfectly dry territory), nor on the north nearer than Titusville; so that all the crude oil had to be drawn by teams over roads almost impassable, and refined oil shipped similarly. With all these disadvantages, the business proved for a time profitable. One great obstacle arose, however, and the remedy which resulted led to the introduction of a process whose vast development is just beginning to be made manifest. The next generation will probably see its immense fruition.

The first successful use of petroleum as fuel with such mechanical and chemical accessories that made it efficient, economical, practicable, and superior to coal, was put in operation at this refinery. It grew out of the necessities of the case. Coal and wood were difficult of access, and the use of naphtha, heavy oil, and residuum was determined upon. An apparatus was constructed for each still, whereby the application of jets of steam, regulated by globe-cocks, injected in proper proportion upon a stream of oleaginous material, made the combustion perfect; all the smoke and unconsumed carbon were done

away with, a most intense heat was created when necessary, and the quantity of liquid used for fuel was uncommonly small. One of the stillmen who was present when this plan was consummated has not been slow to avail himself of another's skill and ingenuity. When oil was discovered in large quantities in Russia he hastened thither, and applying Russian residuum in a similar manner to the locomotives of their railways and to the boilers of steamers on the Black and Caspian Seas, instituted the general plan of using petroleum as fuel, which surprised and delighted the American Consul at Baku, who wrote to the Secretary of State commending "the superiority of the Russians over the Americans in utilizing petroleum as fuel."

The twenty stills and two steam boilers were run by this plan in 1862 incessantly day and night, under the direction of its inventor, at the Humboldt works, for nearly a year, when the extraordinary rise in crude oil and all its products compelled the substitution of coal. The success of this primitive inventor of the use of steam and petroleum as fuel—tardy though it was—has recently been recognized in a manner befitting the value and magnitude of his invention. The government has granted him a patent.

In 1865 or 1866, the yield of oil having become barren in the region of Plummer it was found impossible to refine oil longer in that section, and the famous Humboldt Works were dismantled, wrecked, and the place became desolate and abandoned.

The selection by Mr. Downer of Corry, as the location of a large refinery, was more fortunate. It was then, and is now, on the line of an arterial railroad and is a natural outlet of the oil trade. These works were built in a most substantial manner, with large capacity for distilling and refining, and to Mr. Downer is due the first successful efforts at converting paraffine oil into a lubricant and wax. In this refinery was first applied the principle of congelation by ice, of eliminating the heavy oil by a press, and of subsequent operations which afforded a mineral stearine and paraffine wax, now used for many purposes which were previously unknown. The manufacture of paraffine wax candles dates from Mr. Downer's early efforts at Corry. It can be said of this gentleman, as probably of no other in the manufacture of kerosene, that he and his successors have kept ahead in all the advances and discoveries growing out of petroleum, and to this is due the fact that of all the refineries that abounded in the early days, his is one of the very few still extant. The more modern modes of distilling and refining will be treated of in our next chapter.

## Speculative Halls—the Oil City Oil Exchange

It was but natural that speculation in petroleum would start shortly after Drake's well demonstrated how a volume of crude oil could be made available. An outcome of such trading was the oil exchange and the one at Oil City was the best known. This report is from *The Petroleum Age*, published in Bradford, Pa., May, 1885 (Volume IV, Number 4), pages 975-978.

A history of the Oil City Exchange is a history of the oil speculation of the world. Although not the first exchange ever built for the exclusive use of the men who buy and sell crude petroleum, and at the present time not the largest in the group of four, in which the bulk of the oil certificates is constantly transferred from one owner to another, it has been more closely identified with the oil business for a longer term of years and exerted a larger influence on values than any of the other exchanges. For many years it has ranked as the first of the oil exchanges of the country, and the price of the crude product decided by the loud vociferations of the brokers about its nickel-plated ring has been recognized as the standard of value in all sections of the globe. Somewhat overshadowed at the present time by its more powerful rival in New York, its corridors are still frequented by men, comparatively young in years, but old in reminiscences of life along "the creek," and of the by-gone days, when an oil certificate and a pipe-line were among the unguessed probabilities of a mighty future.

Oil City dates its inception to 1860, soon after the striking of the Drake well. The town increased rapidly, with the growth of the oil business, and in 1865 had a population of eight or ten thousand. Situated at the junction of Oil Creek with the Allegheny River, it had long formed a sort of rendezvous for the hordes of lumbermen who annually floated their rafts of lumber down the natural lines of commerce to Pittsburgh. A few scattered houses of public resort in what is now the west side of the Third Ward formed the nucleus of the town. The rich petroleum deposits that were developed along the Oil Creek valley brought the place into prominence, and made it the headquarters for the buyers of crude at the wells. The site upon which the city is now located was formerly owned by the Michigan Rock Oil Co. on the west side, and Graff, Hasson & Co. on the east side. In 1863, William L. Lay & Co. became the owners of the south side, and founded a new town which subsequently became known as

Venango City. This place in 1866 had a population of 1,500 and became an integral portion of Oil City, by act of Legislature in 1871.

The oil brokerage business was started about the year 1868 by the parties who purchased oil for the Pittsburgh, Philadelphia and Baltimore refineries. These brokers generally received a commission of ten cents per barrel from the buyers and, in some instances, increased their receipts by five cents a barrel from the sellers. Soon regular brokerage boards were formed at Titusville, Oil City and other points where crude oil was bought and sold, and these led to the establishment of exchanges, which regulated rates of brokerage and laid down rules for the conduct and management of the growing business.

In 1865, Oil City had become the most important shipping point in the region, and numerous brokers and shippers had established their offices here. No prescribed place for transacting business had yet been thought necessary. Trades were made anywhere, in the offices along Main street, at the wells, or any convenient point that offered itself.

Sometimes a shipper, upon receiving intelligence of any important occurrence in New York, would mount a horse and start up the creek, buying all the oil he could. He might be followed a while later by some one willing to pay twenty-five cents more on a barrel than he, and the second might be followed by a third willing to pay a still higher figure. Or the condition of things might be reversed and the brokers compelled to sell at a lower rate than the purchase price. Fluctuations were wide, the market price raising or falling a dollar a barrel in a single day.

In 1867, the Farmers Railroad was completed between Oil City and Titusville. The oil producers now got in the habit of coming to Oil City in the morning, remaining through the day and returning home in the evening. The road was a very rough one, and numerous stoppages at small stations made the trip from Oil City to Titusville consume about three hours. After a time a car was put on the road especially devoted to oil men[.] In this they bought and sold oil in very much the same manner as they do at present, except that there were no certificates. The transactions were principally in "spot," "regular" and "future" oil. "Spot oil" was to be moved and paid for at once; "regular" allowed the buyer ten days' time to put the oil on the cars and pay for it; "futures," of course, were regulated to suit the convenience of either party. With the exception of future oil, there were no written contracts in any of these transactions. Large lots frequently changed hands in the passenger car, which thus became really the first



oil exchange in the region. No officers or governing rules regulated the conduct of the business at this time, and but few disputes of any moment occurred. The word of an oil man was considered as good as his bond, and a broker had but to name his principals and often was his only witness to a bargain and sale involving thousands of dollars. All the oil was shipped either on the cars or down the river in barges.

#### FLUCTUATION OF VALUES.

The price of the crude product has been most capricious, shifting all the way down the scale from \$20 to 10 cents per barrel. This uncertainty of values has made petroleum one of the favorite speculative commodities of the age. From the time the first well was struck in August, 1879 [1859], until the close of that year the average price per barrel was \$20. The price in 1860 was \$9.60, and in 1861 the production was so much in excess of the demand for consumption that the average price for the year was only 49 cents per barrel of forty-two gallons each, and during October, November and December the best price obtainable was 10 cents. Petroleum was gradually introduced into foreign countries, and as its great value as an illuminant came to be known the demand increased and the price advanced accordingly until during 1864 the average price per barrel was \$7.62. This stimulated operations in producing circles to such an extent that the daily production was increased to 30,000 barrels in 1874, and during that year the average price was \$1.30. Since that time both the supply and demand have increased. The total production in 1877 was in round numbers 13,500,000, or a daily average of 37,000 barrels. The average price for the year was \$2,[.]85 at the wells. The first export was in 1861 of 27,000 barrels, valued at \$1,000,000, and the export of petroleum amounted in 1877 in round numbers to \$62,000,000. The amount exported in later years has exceeded the exports of 1877, but the valuation has never reached the figures of that year. Exports now exceed 500,000,000 gallons per annum, at an annual valuation of \$45,000,000 to \$50,000,000. Since 1877 the price of crude has occupied a much lower plane, moving upwards no higher than \$1.87½ and downward as low as 49¼ cents per barrel.

#### THE ORGANIZATION OF THE EXCHANGE.

The disadvantages of an oil exchange on wheels, were at once recognized, and in December 1869, steps were taken to effect a permanent

organization. The first officers were elected in Owston & Lower's office on Main street, and a part of a building on Centre street rented for an assembly room. Finding this room too small, the exchange was removed in the summer of 1871 to the Sands block, where a place was prepared and occupied until January 1872, when it was destroyed by fire. The next removal was to the Opera House block, and subsequently temporary quarters were taken in a cheaply built structure adjoining the Empire Transportation Company's office. Here it remained until the following year when the organization was dissolved in consequence of complications with the South Improvement Company. From this time until February 1874 what business was done, was transacted on the streets, at the hotels and offices.

The first record of a permanent Oil Exchange is found in the Secretary['s] book, under date of February 7th 1874, and reads as follows:

"A meeting of parties interested in the organization of an Oil Exchange was called to order in the Collins block, with Wm. Hasson in the chair, and J. F. Leech, Secretary, pro tem, who read a list of fifty-five names of parties willing to become members of said organization. A. J. Greenfield, after stating the object of the meeting moved: That the rules and regulations of the former Oil City Oil Exchange be adopted as the basis of this organization, subject to any amendments found necessary. Carried. Motion to elect officers by ballot, carried. The election of officers resulted as follows: George V. Forman, President; A. J. Greenfield, Vice President; J. F. Leech, Secretary; James Mawhinney, Treasurer; Room Committee; Henry Fisher, James Mawhinney, P. H. Judd, Finance Committee; John Parker, Joseph Bates, C. F. Thum. A motion to elect a committee of three on rules and regulations was carried and the following named gentlemen were elected: W. L. Lay, J. J. Vandergrift, J. F. Leech. On motion the room committee was ordered to report on the matter of rooms and furniture of same at next meeting. Adjourned to meet Feb. 16th at 2 p. m.

J. F. LEECH, Secretary.

The new organization started in rooms in the Collins House block. At first there was a great lack of discipline and order. The rules were not stringent and business commenced in the morning as soon as two or more members had put in an appearance and continued until eight, nine or ten o'clock in the evening. Gradually a better system began to be adopted, and soon rules and regulations were enforced that brought about the system which is now in vogue.

The Collins House block continued to be the headquarters of the Oil City Exchange until 1878, when it removed to the substantial building it now occupies. Those four years in the hotel building were as eventful as any that have since succeeded. During this period the exchange flourished and became a power in the land. The New York Graphic said in 1877, that the trade of the Oil City Oil Exchange ranks third in extent of business in the United States, New York and San Francisco only being ahead.

### THE NEW EXCHANGE.

In June 1877 the building of a structure commensurate [commensurate] with the magnitude and importance of the exchange was begun. The formal opening occurred on the 23d of April 1878. The officers of the exchange at this time were: A. J. Greenfield, President; J. T. Jones, Vice President; C. P. Stevenson, Secretary; John Mawhinney, Treasurer; A. J. Greenfield, William Hasson, M. K. Bettis, C. H. Duncan, William Parker, J. T. Jones, Joseph Seep, J. T. Gibson, John Mawhinney, J. J. Vandergrift, E. C. Bradley, Daniel Goettel, Peter Schreiber, Directors.

The cost of the new building exclusive of the furnishing was \$65,000. Mr. J. M. Budge, of Meadville, was the Architect, and the building committee consisted of William Hasson, A. J. Greenfield, William Parker and John Mawhinney. The following description of the building is from the Derrick of April 24th 1878: The structure was originally 60x100 feet in dimensions, but in 1884 an annex 35 feet in width was erected on the south side of the building, which now covers an area of 95x100 feet.

### DESCRIPTION OF THE BUILDING.

The exchange is situated upon the most eligible business site in the city, facing on three main streets Centre, Seneca and Sycamore and within easy communication with the banks[,] postoffice and depots. Its present dimensions are 95 by 100 feet and three stories high with basement. The exterior is imposing and substantial in appearance without being pretensions [*sic*] and of the modern style of architecture unadorned with "ginger bread work." The material used is pressed brick with Amherst stone trimmings and galvanized iron cornices surmounted by ornate pediments one over each of the three faces of the building with the inscription Oil [*sic*] City Oil Exchange in relief.

A flag staff tops the pedement [*sic*] over the main entrance. Iron stairways lead to the several entrances of the building, the one on Seneca street being flanked by two lamp posts capped by handsome gas lamps. A neat iron railing surrounds the area. The building is well supplied with windows, those of the first story being of large dimensions fitted with plate glass. The massive doors are of hard wood finely finished and fitted with bronze locks as is each door in the building.

### THE OIL EXCHANGE ROOM.

This apartment communicates by three entrances with the street. The ground entrance is from the main front on Seneca street leading first into a vestibule and thence into a corridor through three archways into the exchange room. In the center of the corridor stands an aquarium surrounded by a nickle [*sic*] plated rail furnished by Tiffany & Co., of New York. The fountain is of bronze finish of handsome modern design and with its cool [s]plashing waters and luxuriant plants proves a grateful addition in the sweltering days of summer. The exchange room is an elaborately finished apartment, admirably lighted in the day time by three large skylights in the roof and at night by two elaborate bronze chand[e]liers, each with 24 lights, and bracket lights on the wall. The floor of walnut and ash measures forty by sixty feet and the height to the underside of the truss of the curved ceiling is thirty feet. On a line with the second story is a gallery for the accommodation of speculators supplied with neat iron stools, and communicating with the corridor are glass reversible doors. The next str[i]king feature of the room is the raised platform on the west side sacred to the use of the President and Secretary, which is a most artistic piece of furniture composed of walnut and ash finely designed and richly finished. On either end of the balustrade inclosing the platform is a bronze figure in medieval costume holding aloft a gas lamp. Three bulletin boards are displayed on the south side of the room designed for eastern and foreign quotations etc. Around the sides of the room are writing desks and settees corresponding in material and design with those of the presiding officer. Glass reversible doors communicate with the various entrances. The bull ring whereon the noisy brokers hang and barter is a shining ornament. It is an elliptical enclosure solidly constructed of massive bars nickle plated and was manufactured by Tiffany & Co., of New York. The frescoing of the exchange room is elaborate and the designs highly artistic.



## THE FIRST FLOOR.

Contains besides the exchange room several apartments. The one situated on the north east corner thirty-seven by thirty-eight feet is occupied by the Western Union Telegraph office. A room of similar size on the corner of Sycamore and Seneca streets is the office of the Bankers and Merchants Telegraph Co. On the western side of the Centre street entrance, the Postal Telegraph Co., have headquarters in a room measuring seventeen and one-half by nineteen feet. These offices have receiving windows in the exchange room and are peculiarly adapted for the telegraphic service. The immense telegraphic business done in this city necessitates a large force of operators and all the available space has consequently been ingeniously utilized. The appointments are first class in every respect. Entrances from the street and interior are provided. The additional room added by the annex which was opened February 20th 1884 affords a smoking room at the north west end and a reading room at the south west end. The intervening space between these rooms is occupied by "the Lamps Fold," the closets and washrooms which are supplied with every necessary convenience. The ceilings of these rooms are 15 feet and two inches high.

## THE SECOND FLOOR.

Reached by winding stairways, finished in mahogany, walnut and oak, contains the gallery walk of the exchange room and suites of offices elegantly furnished and fitted up with all modern conveniences, including marble-topped washstands and speaking tubes in each room communicating with the exchange and telegraph offices. The ceilings are twelve feet high. Each apartment is admirably lighted and ventilated. The rooms are occupied as follows:

- No. 1. D. Fisher, I. H. Webb.  
2. T. A. McLaughlin.  
3. W. H. Dufur.  
4. Thomas A[.] Kane.  
5. M. Lowentritt, A. Kline.  
6. H. Lewis & Co., now Joseph Seep.  
7. H. Lewis & Co.  
8. H. L. Foster.

## ANNEX.

19. G. Darr, Hilton & Waugh Co., limited.
20. Amos Steffee and Charles Hall.
21. Office.  
Directors' Room.

## THE THIRD FLOOR

Is fitted up and furnished in a similar manner, with the same number of offices, which are occupied as follows:

- No. 9. H. Howe, Greenfield [*sic*] & Barr.
10. I. M. Sowers, R. J. Moorhead.
11. J. Wolcott, J. J. Hendricks.
12. B. F. Kraffert.
13. I. Reinaman.
14. Office.
15. J. Goettel, E. V. Selden.
16. Clark & Foster.

## ANNEX.

Clearing House.  
Reno Oil Co.

24. C. J. Fraser, A. Fraser.

## THE BASEMENT

Is surrounded by an area way communicating by steps with the street, and under the pavement are the coal vaults. The various apartments are remarkably light and airy and easy of access. A large boiler furnishes steam heat to the building.

Every office is supplied with a marble-topped washstand and bronze radiators of handsome design scattered profusely throughout the building furnish the necessary heat.

Great care has been taken in the new building to thoroughly ventilate it by the most approved methods of modern science. In the sub-basement are cold air ducts running out into the areas, and these are connected with four upright shafts of large dimensions, extending above the roof and terminating in four patent iron ventilators. Ordinary registers let into the shaft communicate with the interior of the building—a constant current of air passes through these shafts, drawing off the foul vapor and supplying its place with cool, fresh air.

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